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LOGARITHMIC AND
TRIGONOMETRIC TABLES

A SERIES OF MATHEMATICAL TEXTS

EDITED BY

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LOGARITHMIC AND TRIGONOMETRIC TABLES

REVISED EDITION

PREPARED UNDER THE DIRECTION OF
EARLE RAYMOND HEDRICK

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PREFACE

THE present edition of this book contains several tables not contained in the previous editions. The probability of the occurrence of errors has been minimized by using electrotype reproductions of the tables previously included, even when changes were made. Remarkably few errors existed in the original edition; what few have been discovered have been corrected.

Minor changes only occur in the earlier pages. Care has been taken to preserve the page numbers of the principal tables up to page 114, so that older editions may be used in class-work without confusion, and texts which contain the principal tables may be used in the same class.

Among the minor changes are the insertion of a condensed table of logarithms and antilogarithms (Table Ia, p. 20), the insertion of a table of values of S and T for interpolation in logarithmic trigonometric functions (Table IIIa, p. 45), and the insertion on pages 1-19 of the logarithms of a few important numbers at appropriate points.

The principal changes follow page 114. Tables VIII and IX (pp. 115-122) make reasonably complete the tables of hyperbolic functions formerly represented only by Table XII (pp. 112-114): These functions are of increasing importance, notably in Electrical Engineering.

The table of haversines (Table X, pp. 123-125) will be welcomed particularly by those interested in navigation.

The table of factors of composite numbers and logarithms of primes (Table XI, pp. 126-127) has obvious uses.

Tables XII a, b, c, d, e, f , pages 128-132, are intended for work involving compound interest, annuities, depreciation, etc. They will be useful for statistics, insurance, accounting, and the mathematics of business.

The same care has been exercised to eliminate errors in the new tables that resulted in so great a degree of reliability in the original edition of these tables.

E. R. HEDRICK.

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EXPLANATION OF THE TABLES *

**TABLE I. FIVE-PLACE COMMON LOGARITHMS OF
NUMBERS FROM 1 TO 10 000**

1. Powers of 10. Consider the following table of values of powers of 10:

COLUMN A		COLUMN B	COLUMN A		COLUMN B
10^1	=	10	10^0	=	1.
10^2	=	100	10^{-1}	=	.1
10^3	=	1000	10^{-2}	=	.01
10^4	=	10000	10^{-3}	=	.001
10^5	=	100000	10^{-4}	=	.0001
10^6	=	1000000	10^{-5}	=	.00001
10^7	=	10000000	10^{-6}	=	.000001
10^8	=	100000000	10^{-7}	=	.0000001
10^9	=	1000000000	10^{-8}	=	.00000001
10^{10}	=	10000000000	10^{-9}	=	.000000001

This table may be used for multiplying or dividing powers of 10, by means of the rules $10^a \cdot 10^b = 10^{a+b}$, $10^a \div 10^b = 10^{a-b}$. Thus, to multiply 1000 by 100,000, add the exponent of 10 in column A opposite 1000 to the exponent of 10 opposite 100,000: $3 + 5 = 8$; and look for the number in column B opposite 10^8 , *i.e.* 100,000,000. Similarly $1,000,000 \times .0001 = 100$, since $6 + (-4) = 2$.

To divide 1,000,000 by 100, from the exponent of 10 opposite 1,000,000 subtract the exponent of 10 opposite 100; $6 - 2 = 4$; and look for the number opposite 10^4 , *i.e.* 10,000. Similarly $.001 \div 1,000,000 = .000000001$, since $-3 - 6 = -9$. To find the 4th power of 100, multiply the exponent of 10 opposite 100 by 4: $4 \times 2 = 8$, and look for the number opposite 10^8 , *i.e.* 100,000,000. Likewise $(.001)^3 = .000000001$, since $3 \times (-3) = -9$. To find the cube root of 1,000,000,000, divide the exponent of 10 opposite 1,000,000,000 by 3, $9 \div 3 = 3$, and look for the number opposite 10^3 .

* This Explanation, written to accompany the five-place tables, may be used also for the four-place tables by omitting the last figure in each example in a manner obvious to the teacher.

2. Common Logarithms. The exponent of 10 in any row of column *A* is called the common logarithm* of the number opposite in column *B*; thus $\log 10 = 1$, $\log 100 = 2$, $\log 1000 = 3$, etc.; $\log 1 = 0$, $\log .1 = -1$; $\log .01 = -2$, $\log .001 = -3$, etc. In general, if $10^l = n$, *l* is called the *common logarithm of n*, and is denoted by $\log n$.

3. Fundamental Principles. Logarithms are useful in reducing the labor of performing a series of operations of multiplication, division, raising to powers, extracting roots, as above; they have no necessary connection with trigonometry, since all the operations could be performed without them; but they are a great labor-saving device in arithmetical computations. They do not apply to addition and subtraction.

The principles of their application are stated as follows:

I. *The logarithm of a product is equal to the sum of the logarithms of the factors:* $\log ab = \log a + \log b$. This follows from the fact that if $10^l = a$ and $10^L = b$, $10^{l+L} = a \cdot b$. In brief: *to multiply, add logarithms.*

II. *The logarithm of a fraction is equal to the difference obtained by subtracting the logarithm of the denominator from the logarithm of the numerator:* $\log (a/b) = \log a - \log b$. For, if $10^l = a$ and $10^L = b$, then $10^{l-L} = a \div b$. In brief: *to divide, subtract logarithms.*

III. *The logarithm of a power is equal to the logarithm of the base multiplied by the exponent of the power:* $\log a^b = b \log a$. This follows from the fact that if $10^l = a$, then $10^{lb} = a^b$.

IV. *The logarithm of a root of a number is found by dividing the logarithm of the number by the index of the root:* $\log \sqrt[n]{a} = (\log a)/n$. This follows from the fact that if $10^l = a$, then $10^{l/n} = a^{1/n} = \sqrt[n]{a}$.

Corollary of II. *The logarithm of the reciprocal of a number is the negative of the logarithm of the number:* $\log (1/a) = -\log a$, since $\log 1 = 0$.

4. Characteristic and Mantissa. It is shown in algebra that every real positive number has a real common logarithm, and that if *a* and *b* are any two real positive numbers such that $a < b$, then $\log a < \log b$. Neither zero nor any negative number has a real logarithm.

An inspection of the following table, which is a restatement of a part

<i>a</i>	1	10	100	1000	10000	100000	1000000	10000000
$\log a$	0	1	2	3	4	5	6	7

* Common logarithms are exponents of the base 10; other systems of logarithms have bases different from 10; Napierian logarithms (see Table VII, p. 112) have a base denoted by *e*, an irrational number whose value is approximately 2.71828. When it is necessary to call attention to the base, the expression $\log_{10} n$ will mean common logarithm of *n*; $\log_e n$ will mean the Napierian logarithm, etc.; but in this book $\log n$ denotes $\log_{10} n$ unless otherwise explicitly stated.

of the table of § 1, p. v, shows that

the logarithm of every number between 1 and 10 is a proper fraction,
 the logarithm of every number between 10 and 100 is 1 + a fraction,
 the logarithm of every number between 100 and 1000 is 2 + a fraction;
 and so on. It is evident that the logarithm of every number (not an exact power of 10) consists of a whole number + a fraction (usually written as a decimal). The whole number is called the **characteristic**; the decimal is called the **mantissa**. The characteristic of the logarithm of any number greater than 1 may be determined as follows:

RULE I. *The characteristic of any number greater than 1 is one less than the number of digits before the decimal point.*

The following table, which is taken from § 1, p. v, shows that

a	.0000001	.000001	.00001	.0001	.001	.01	.1	1
$\log a$	-7	-6	-5	-4	-3	-2	-1	0

the logarithm of every number between .1 and 1 is $-1 +$ a fraction,
 the logarithm of every number between .01 and .1 is $-2 +$ a fraction,
 the logarithm of every number between .001 and .01 is $-3 +$ a fraction;
 and so on.

Thus the characteristic of every number between 0 and 1 is a negative whole number; there is a great practical advantage, however, in computing, to write these characteristics as follows: $-1 = 9 - 10$, $-2 = 8 - 10$, $-3 = 7 - 10$, etc. *E.g.* the logarithm of .562 is $-1 + .74974$, but this should be written $9.74974 - 10$; and similarly for all numbers less than 1.

RULE II. *The characteristic of a number less than 1 is found by subtracting from 9 the number of ciphers between the decimal point and the first significant digit, and writing -10 after the result.*

Thus, the characteristic of $\log 845$ is 2 by Rule I; the characteristic of $\log 84.5$ is 1 by (I); of $\log 8.45$ is 0 by (I); of $\log .845$ is $9 - 10$ by (II); of $\log .0845$ is $8 - 10$ by (II).

An important consequence of what precedes is the following:

To move the decimal point in a given number one place to the right is equivalent to adding one unit to its logarithm, because this is equivalent to multiplying the given number by 10. Likewise, to move the decimal point one place to the left is equivalent to subtracting one unit from the logarithm. Hence, moving the decimal point any number of places to the right or left does not change the mantissa but only the characteristic.*

Thus, 5345, 5.345, 534.5, .05345, 534500 all have the same mantissa.

* Another rule for finding the characteristic, based on this property, is often useful: if the decimal point were just after the first significant figure, the characteristic would be zero; start at this point and count the digits passed over to the left or right to the actual decimal point; the number obtained is the characteristic, except for sign; the sign is negative if the movement was to the left, positive if the movement was to the right.

5. Use of the Table. To use logarithms in computation we need a table arranged so as to enable us to find, with as little effort and time as possible, the logarithms of given numbers and, vice versa, to find numbers when their logarithms are known. Since the characteristics may be found by means of Rules I and II, p. ix, only mantissas are given. This is done in Table I. Most of the numbers in this table are irrational, and must be represented in the decimal system by approximations. A five-place table is one which gives the values correct to five places of decimals.

PROBLEM 1. *To find the logarithm of a given number.* First, determine the characteristic, then look in the table for the mantissa.

To find the mantissa in the table when the given number (neglecting the decimal point) consists of four, or less, digits (exclusive of ciphers at the beginning or end), look in the column marked *N* for the first three digits and select the column headed by the fourth digit: the mantissa will be found at the intersection of this row and this column. Thus to find the logarithm of 72050, observe first (Rule I) that the characteristic is 4. To find the mantissa, fix attention on the digits 7205; find 720 in column *N*, and opposite it in column 5 is the desired mantissa, .85763; hence $\log 72050 = 4.85763$. The mantissa of .007826 is found opposite 782 in column 6 and is .89354; hence $\log .007826 = 7.89354 - 10$.

6. Interpolation. If there are more than four significant figures in the given number, its mantissa is not printed in the table; but it can be found approximately by assuming that the mantissa varies as the number varies in the small interval not tabulated; while this assumption is not strictly correct, it is sufficiently accurate for use with this table.

Thus, to find the logarithm of 72054 we observe that $\log 72050 = 4.85763$ and that $\log 72060 = 4.85769$. Hence a change of 10 in the number causes a change of .00006 in the mantissa; we assume therefore that a change of 4 in the number will cause, approximately, a change of $.4 \times .00006 = .00002$ (dropping the sixth place) in the mantissa; and we write $\log 72054 = 4.85763 + .00002 = 4.85765$.

The difference between two successive values printed in the table is called a **tabular difference** (.00006, above). The proportional part of this difference to be added to one of the tabular values is called the **correction** (.00002, above), and is found by multiplying the tabular difference by the appropriate fraction (.4, above). These proportional parts are usually written *without the zeros*, and are printed at the right-hand side of each page, to be used when mental multiplications seem uncertain.

Example 1. Find the logarithm of .0012647. Opposite 126 in column 4 find .10175; the tabular difference is 34 (zeros dropped); $.7 \times 34$ is given in the margin as 24; this correction added gives .10199 as the mantissa of .0012647; hence $\log .0012647 = 7.10199 - 10$.

Example 2. Find the logarithm of 1.85643. Opposite 185 in column 6 find .26858; tabular difference 23; $.43 \times 23$ is given in the margin as 10; this correction added gives .26868 as the mantissa of 1.85643; hence $\log 1.85643 = 0.26868$.

7. Reverse Reading of the Table. **PROBLEM 2.** *To find the number when its logarithm is known.** First, fixing attention on the mantissa only, find from the table the number having this mantissa, then place the decimal point by means of the two following rules : †

RULE III. *If the characteristic of the logarithm is positive (in which case the mantissa is not followed by -10), begin at the left, count digits one more than the characteristic, and place the decimal point to the right of the last digit counted.*

RULE IV. *If the characteristic is negative (in which case the mantissa will be preceded by a number n and followed by -10), prefix $9 - n$ ciphers, and place the decimal point to the left of these ciphers.*

Example 1. Given $\log \omega = 1.22737$, to find ω .

Since the mantissa is 22737, we look for 22 in the first column and to the right and below for 737, which we find in column 8 opposite 163. The number is therefore 1633. Since the characteristic is $+1$, we begin at the left, count 2 places, and place the point; hence $\omega = 16.33$.

Example 2. Given $\log \omega = 2.24912$, to find ω .

This mantissa is not found in the table; in such cases we interpolate as follows: select the mantissa in the table next less than the given mantissa, and write down the corresponding number; here, 1774; the tabular difference is 25; the actual difference (found by subtracting the mantissa of 1774 from the given mantissa) is 17; hence the proportionality factor is $17/25 = .68$ or $.7$ (to the nearest tenth). Since moving the decimal point does not affect the mantissa, it follows that the digits in the required number are 17747 (to five places). The characteristic 2 directs to count 3 places from the left; hence $\omega = 177.47$.

RULE. *In general, when the given mantissa is not found in the table, write down four digits of the number corresponding to the mantissa in the table next less than the given mantissa, determine a fifth figure by dividing the actual difference by the tabular difference, and locate the decimal point by means of the characteristic.*

8. Illustrations of the Use of Logarithms in Computation.

Example 1. To find $832.43 \times 802.43 \times 16.725 \times .000178$.

$$\begin{aligned} \log 832.43 &= 2.92034 \\ \log 802.43 &= 2.48062 \\ \log 16.725 &= 1.22337 \\ \log .000178 &= \underline{6.25042 - 10} \text{ (add)} \\ \log \omega &= 2.87475 \quad \text{whence } \omega = 749.47. \end{aligned}$$

Example 2. To find $461.29 \div 21.4$.

$$\begin{aligned} \log 461.29 &= 2.66397 \\ \log 21.4 &= \underline{1.33041} \quad \text{(subtract)} \\ \log \omega &= 1.33356 \quad \text{whence } \omega = 21.556. \end{aligned}$$

* The number whose logarithm is k is often called the **antilogarithm** of k .

† Another convenient form of these rules is as follows: if the characteristic were zero, the decimal point would fall just after the first significant figure; move the decimal point one place to the right for each positive unit in the characteristic, one place to the left for each negative unit in the characteristic.

Illustration of Cologarithms

Example 3. To find $\frac{48.25 \times 132.76 \times .1745}{1415.3}$.

We might add the logarithms of the factors in the numerator and from this sum subtract the logarithm of the denominator; but we can shorten the operation by *adding* the negative of the logarithm of the denominator instead of subtracting the logarithm itself. The negative of the logarithm of a number (when written in convenient form for computation) is called the **cologarithm** of the number. We may find the negative of any number by subtracting it from zero, and it is convenient in logarithmic computation to write zero in the form $10.00000 - 10$. Thus the negative of 2.17 is $7.83 - 10$; the negative of 1.1432 $- 10$ is 8.8568 . Remembering that the cologarithm of a number is its negative we have the following rule:

To find the cologarithm of a number begin at the left of its logarithm (including the characteristic) and subtract each digit from 9, except the last, which subtract from 10; if the logarithm has not $- 10$ after the mantissa, write $- 10$ after the result; if the logarithm has $- 10$ after the mantissa, do not write $- 10$ after the result.*

By this rule the cologarithm of a number can be read directly out of the table without taking the trouble to write down the logarithm. Attention must be given not to forget the characteristic. The use of the cologarithm is governed by the principle:

Adding the cologarithm is equivalent to subtracting the logarithm.

Returning to the computation of the given problem we should write:

$$\begin{aligned}\log 48.25 &= 1.68350 \\ \log 132.76 &= 2.12307 \\ \log .1745 &= 9.24180 - 10 \\ \text{colog } 1415.3 &= 6.84915 - 10 \quad (\text{add}) \\ \log x &= 9.89752 - 10 \quad \text{whence } x = .7998\end{aligned}$$

Example 4. Find the 5th power of 7.26842

$$\begin{aligned}\log 7.26842 &= 0.86144 \\ &\quad \frac{5}{\log x = 4.30720} \quad (\text{multiply}) \\ &\quad \text{whence } x = 20286.\end{aligned}$$

Example 5. Find the 4th root of .007564

$$\log .007564 = 7.87875 - 10.$$

(It is convenient to have, after the division by 4, $- 10$ after the mantissa; hence before the division we add $30.00000 - 30$.)

$$\begin{aligned}\log .007564 &= 37.87875 - 40 \quad (\text{divide by } 4), \\ \log x &= 9.46969 - 10 \quad \text{whence } x = .2949\end{aligned}$$

Example 6. Find the value of $\sqrt[3]{\frac{(34.55)(-856.7)(-48.5)}{(98.75)(-186.3)}}$.

We have no logarithms of negative numbers, but an inspection of this problem shows that the result will be negative and numerically the same as though all the factors were positive; hence we proceed as follows:

$$\begin{aligned}\log 34.55 &= 1.53845 \\ \log 856.7 &= 2.93283 \\ \log 48.5 &= 1.63849 \\ \text{colog } 98.75 &= 8.00546 - 10 \\ \text{colog } 186.3 &= 7.72979 - 10 \quad (\text{add}) \\ &\quad 1.84502 \quad (\text{divide by } 3) \\ \log(-x) &= 0.61501 \quad \text{whence } x = -4.121\end{aligned}$$

* If the logarithm ends in one or more ciphers, the last significant digit is to be understood here.

9. The Slide Rule. A slide rule consists of two pieces of the shape of a ruler, one of which slides in grooves in the other; each is marked

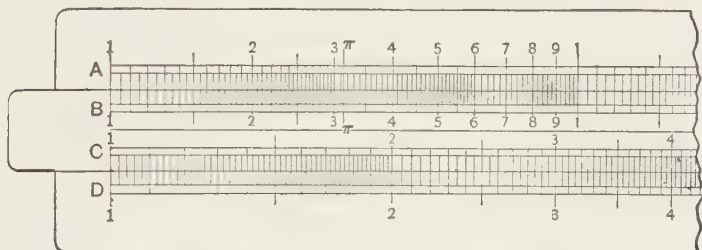


FIG. 1

(Fig. 1) in divisions (scale *A* and scale *B*) whose distances from one end are proportional to the logarithms of the numbers marked on them.

It follows that the sum of two logarithms can be obtained by simply

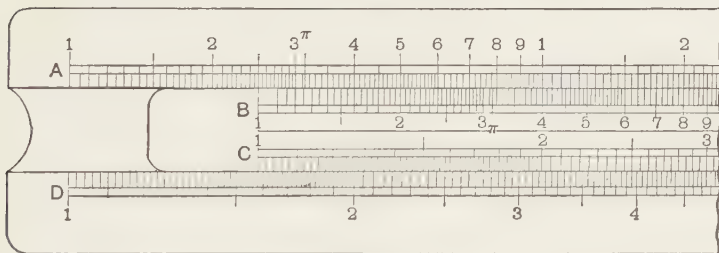


FIG. 2

sliding one rule along the other; thus if (see Fig. 2) the point marked 1 on scale *B* is set opposite the point marked 2.5 on scale *A*, the point on scale *B* marked 2 will be opposite the point on scale *A* marked 5, since $\log 2.5 + \log 2 = \log 5$. Likewise, opposite 3 (scale *B*) read 7.5 (scale *A*); opposite 2.5 (*B*) read 6.25 (*A*), *i.e.* $2.5 \times 2.5 = 6.25$.

Other multiplications can be performed in an analogous manner. Divisions can be performed by reversing the operation. Thus, if 4.5 (*B*) be set on 11.25 (*A*), then 1 (*B*) will be opposite 2.5 (*A*), as in Fig. 2.

Scales *C* and *D* are made just twice as large as scales *A* and *B*. It follows that the numbers marked on *C* and *D* are the square roots of the numbers marked opposite them on scales *A* and *B*.

For a description of more elaborate slide rules, and full directions for use, see the catalogues of instrument makers

A slide rule for practice may be made from the cut printed on one of the fly-leaves in the back of this book.

Ia. CONDENSED LOGARITHMS AND ANTILOGARITHMS

10. Method of Computing Logarithms. This table is a rearrangement of the condensed table given by Hoüel.* From it, the logarithm of any number whatever may be obtained to within 5 in the fifteenth place; or to any desired degree of accuracy less than this.

To illustrate the process, we shall compute $\log \pi$ to nine places. Taking $\pi = 3.14159\,26535\,8979$, we divide it by 3, the first significant digit, obtaining $\pi/3 = 1.04719\,755 \dots$. We then divide this quotient by 1.04, etc., obtaining finally

$$\pi = 3(1.04)(1.006)(1.0009)(1.00001\,52172\,25).$$

We can obtain the logarithm of each of the first four factors from this table. The logarithm of the last factor can be obtained by multiplying its decimal part by $M = .43429\,44819$; for the error made in writing

$$\log(1+x) = Mx$$

is less than $Mx^2/2$. We find Mx either by using the fact that the last column in this table gives multiples of M , or (preferably) by Table VIII, page 115. Adding the five logarithms just mentioned, we find

$$\log \pi = .49714\,98727\,4,$$

which is surely correct to within 1 in the tenth place. The correct value is .49714 98726 9

The process may be applied to any other number in an analogous manner. Such high-place logarithms are occasionally needed in statistical work and in the preparation of tables.

11. Method of Computing Antilogarithms. The condensed table of antilogarithms gives eleven significant figures (ten decimal places). From it, the antilogarithm of any number can be computed to within 5 in the tenth significant digit.

Thus, to compute the antilogarithm of .4342944819 to 8 significant figures, we may write

$$10^{.43429\,44819} = (10^4)(10^{.03})(10^{.004})(10^{.0002})(10^{.00009})(10^{.00000\,44819}).$$

The first five factors may be obtained directly from the table. The last factor may be calculated from the formula $10^x = 1 + (1/M)x$. The error in this formula is less than 3 in the $(2k)$ th decimal place if x is less than $(.1)^k$, where $k > 1$.

However, a much more rapid process depends on the use of Tables I and XI with this table. Thus, by Table I, $10^{.43429} = 2.718$, nearly. By Table XI, $\log 2.718 = .43424\,94524 \dots$. Hence $10^{.43429\,44819} = (2.718)(10^{.00004\,50295}) = (2.718)(10^{.00004})(10^{.00000\,50295})$. Obtaining the second factor from this table, and the last factor from the formula $10^x = 1 + (1/M)x$, by Table VIII, we find $10^{.43429\,44819} = 2.71828\,1826$; while the correct value is 2.718281828 This process requires only *two* long multiplications.

* HOÜEL, *Recueil de Formules et de Tables numériques*.

II. FIVE-PLACE TABLE OF THE ACTUAL VALUES OF THE TRIGONOMETRIC FUNCTIONS OF ANGLES

12. Direct Readings. This table gives the sines, cosines, tangents, and cotangents of the angles from 0° to 45° ; and by a simple device, indicated by the printing, the values of these functions for angles from 45° to 90° may be read directly from the same table. For angles less than 45° read down the page, the degrees being found at the top and the minutes on the left; for angles greater than 45° read up the page, the degrees being found at the bottom and the minutes on the right.

To find a function of an angle (such as $15^\circ 27'.6$, for example) which does not reduce to an integral number of minutes, we employ the process of interpolation. To illustrate, let us find $\tan 15^\circ 27'.6$. In the table we find $\tan 15^\circ 27' = .27638$ and $\tan 15^\circ 28' = .27670$; we know that $\tan 15^\circ 27'.6$ lies between these two numbers. The process of interpolation depends on the assumption that between $15^\circ 27'$ and $15^\circ 28'$ the tangent of the angle varies directly as the angle; while this assumption is not strictly true, it gives an approximation sufficiently accurate for a five-place table. Thus we should assume that $\tan 15^\circ 27'.5$ is halfway between .27638 and .27670. We may state the problem as follows: An increase of $1'$ in the angle increases the tangent .00032; assuming that the tangent varies as the angle, an increase of $0'.6$ in the angle will increase the tangent by $.6 \times .00032 = .00019$ (retaining only five places); hence

$$\tan 15^\circ 27'.6 = .27638 + .00019 = .27657.$$

The difference between two successive values in the table is called, as in Table I, the *tabular difference* (.00032 above). The proportional part of the tabular difference which is used is called the *correction* (.00019 above), and is found by multiplying the tabular difference by the appropriate fraction of the smallest unit given in the table.

Example 1. Find $\sin 63^\circ 52'.8$.

We find

$$\sin 63^\circ 52' = .89777;$$

$$\text{tabular difference} = .00018 \text{ (subtracted mentally from the table),}$$

$$\text{correction} = .8 \times .00018 = .00010 \text{ (to be added).}$$

Hence

$$\sin 63^\circ 52'.8 = .89787.$$

Example 2. Find $\cos 65^\circ 24'.8$.

$$\cos 65^\circ 24' = .41628;$$

$$\text{tabular difference} = 26; .8 \times 26 = 21$$

(to be subtracted because the cosine decreases as the angle increases).

Hence

$$\cos 65^\circ 24'.8 = .41607.$$

RULE. To find a trigonometric function of an angle by interpolation: select the angle in the table which is next smaller than the given angle, and read its sine (cosine or tangent or cotangent as the case may be) and the tabular difference. Compute the correction as the proper proportional part of the tabular difference. In case of sines or tangents **add** the correction; in case of cosines or cotangents, **subtract** it.

13. Reverse Readings. Interpolation is also used in finding the angle when one of its functions is given.

Example 1. Given $\sin \alpha = .32845$, to find α .

Looking in the table we find the sine which is next less than the given sine to be .32832, and this belongs to $19^\circ 10'$. Subtract the value of the sine selected from the given sine to obtain the actual difference = .00013; note that the tabular difference = .00027. The actual difference divided by the tabular difference gives the correction = $13/27 = .5$ as the decimal of a minute (to be added). Hence $\alpha = 19^\circ 10'.5$.

Example 2. Given $\cos \alpha = .28432$, to find α .

The cosine in the table next less than this is .28429 and belongs to $73^\circ 29'$; the tabular difference is 28; the actual difference is 3; correction = $3/28 = .1$ (to be subtracted). Hence $\alpha = 73^\circ 28'.9$.

RULE. To find an angle when one of its trigonometric functions is given : select from the table the same named function which is next less than the given function, noting the corresponding angle and the tabular difference; compute the actual difference (between the selected value of the function and the given value) and divide it by the tabular difference; this gives the correction which is to be added if the given function is sine or tangent, and to be subtracted if the given function is cosine or cotangent.

III. FIVE-PLACE COMMON LOGARITHMS OF THE TRIGONOMETRIC FUNCTIONS

14. Use of the Table. If it is required to find the numerical value of $x = 27.85 \times \sin 51^\circ 27'$, we may apply logarithms as follows :

$$\begin{aligned}\log 27.85 &= 1.44483. \\ \log \sin 51^\circ 27' &= 9.89324 - 10 \text{ (add).} \\ \log x &= 1.33807 \qquad x = 21.78\end{aligned}$$

The only new idea here is the method of finding $\log \sin 51^\circ 27'$, which means the logarithm of the sine of $51^\circ 27'$. The most obvious way is to find in Table I, $\sin 51^\circ 27' = .78206$, and then to find in Table II, $\log .78206 = 9.89324 - 10$, but this involves consulting two tables. To avoid the necessity of doing this, Table III gives the logarithms of the sines, cosines, tangents, and cotangents. The arrangement and the principles of interpolation are similar to those given on p. viii for Table I. The sines and cosines of all acute angles, the tangents of all acute angles less than 45° and the cotangents of all acute angles greater than 45° are proper fractions, and their logarithms end with -10 , which is not printed in the table, but which should be written down whenever such a logarithm is used.

Example 1. Find $\log \sin 68^\circ 25'.4$.

On the page having 68° at the bottom, and in the row having 25' on the right find $\log \sin 68^\circ 25' = 9.96843 - 10$, the tabular difference is 5; $.4 \times 5$ is given in the margin as 2; this is the correction to be added, giving $\log \sin 68^\circ 25'.4 = 9.96845 - 10$.

(In case of sine and tangent *add* the correction. in case of cosine and cotangent, *subtract* the correction.)

Example 2. Given $\log \cos \alpha = 9.72581 - 10$, to find α .

The logarithmic cosine next less than the given one is $9.72562 - 10$ and belongs to $57^\circ 53'$; the actual difference is 19; the tabular difference is 20; hence the correction is $19/20 = 1.0$ (to the nearest tenth); (subtract); hence $\alpha = 57^\circ 52'.0$.

In finding $\log \csc \alpha$ for any angle α , note that $\log \csc \alpha = -\log \sin \alpha$, since $\csc \alpha = 1/\sin \alpha$. Hence the tabular differences for $\log \csc$ are precisely the same as those for $\log \sin$ throughout the table, but taken in reversed order. Likewise, $\log \sec \alpha = -\log \cos \alpha$, $\log \csc \alpha = -\log \sin \alpha$; hence $\log \sec \alpha$ and $\log \csc \alpha$ are omitted.

For angles near 0° or near 90° , the interpolations are not very accurate if the differences are large. For the calculation of sine or tangent near 0° , Table IIIa, page 45, gives the values of

$$S = \log \sin A - \log A' \quad \text{and} \quad T = \log \tan A - \log A',$$

where A is the given angle and A' is the number of minutes in A , for values of A between 0° and 3° . Then

$$\log \sin A = \log A' + S \quad \text{and} \quad \log \tan A = \log A' + T,$$

for small angles. Moreover, since we have $\cos A = \sin(90^\circ - A)$ and $\csc A = \tan(90^\circ - A)$,

$$\log \cos A = \log (90^\circ - A)' + S \quad \text{and} \quad \log \csc A = \log (90^\circ - A)' + T,$$

when A is near 90° .

Another method practically equivalent to the preceding is to use the approximate relations

$$\log \sin A - \log \sin B = \log A' - \log B'$$

and

$$\log \tan A - \log \tan B = \log A' - \log B',$$

where A is the given angle and B is the nearest angle to A that is given in the table. If $A < 3'$ and $|A - B| < 1'$, these formulas give $\log \sin A$ and $\log \tan A$ to five decimal places.

IV-V. RADIAN MEASURE

15. Computations in Radian Measure. The reduction of degrees to radians is facilitated by Table IV — *Conversion of Degrees to Radians*. Since π radians = 180° , this table may be regarded as a table of multiples of $\pi/180$.

The values of $\sin x$, $\cos x$, $\tan x$, are stated for every angle x from 0.00 radians to 1.60 radians at intervals of .01 radian in Table V — *Trigonometric Functions in Radian Measure*. The values of any of these functions for larger values of x may be computed by first converting the value of the angle in radian measure to degree measure, by Table Va, and then finding the value of the function from Table II.

The reduction of radians to degrees can be performed directly by Table V; or, for greater accuracy, by the supplementary Table Va.

VI. POWERS — ROOTS — RECIPROCAL

16. Arrangement. This table is arranged so that the square, cube, square root, cube root, or reciprocal can be read directly to five decimal places for any number n of three significant figures. To attain this, not only n^2 , n^3 , $\sqrt{n}$, $\sqrt[3]{n}$, $1/n$, but also $\sqrt{10n}$, $\sqrt[3]{10n}$, $\sqrt[3]{100n}$ are printed on every page. All values have been carefully recomputed and checked.

Thus to find $\sqrt{1.17}$, read in $\sqrt{n}$ column the result: 1.08167. To find $\sqrt{11.7}$, read in the same line, in $\sqrt{10n}$ column the result: 3.42053. To find $\sqrt{117}$, read 10 times the entry in $\sqrt{n}$ column, since $\sqrt{117} = 10\sqrt{1.17}$.

Similarly, $\sqrt[3]{1.17} = 1.05373$ from $\sqrt[3]{n}$ column; $\sqrt[3]{11.7} = 2.27019$ from the same line in $\sqrt[3]{10n}$ column; $\sqrt[3]{117} = 4.89097$ from the same line in $\sqrt[3]{100n}$ column.

The effect of a change in the decimal point in n^2 , n^3 , and $1/n$ is only to shift the decimal point in the result, without altering the digits printed.

VII. NAPIERIAN OR NATURAL LOGARITHMS

17. The Base e . — Natural Logarithms. The number $e = 2.7182818 \dots$ is called the **natural base** of logarithms. The logarithms of numbers to this base are given in Table VII at intervals of .01 from 0.01 to 10.09, and at unit intervals from 10 to 409. The fundamental relation $\log_e n = \log_e 10 \times \log_{10} n$ enables us to transfer from the base 10 to the base e , or conversely; where $\log_e 10 = 2.30258509$.

VIII. MULTIPLES OF M AND OF $1/M$

18. Multiples of M and $1/M$. This table is convenient whenever a number is to be multiplied by M or by $1/M$. This occurs whenever it is desired to change from common logarithms to natural logarithms, or conversely, since $M = \log_{10} e$ and since we have

$$\log_{10} x = (\log_e x)(\log_{10} e) = M \log_e x \quad \text{and} \quad \log_e x = (1/M) \log_{10} x.$$

Other formulas that require these multiples are

$$\log_{10} e^x = x \log_{10} e = x \cdot M \quad \text{and} \quad \log_e (10^n \cdot x) = \log_e x + n(1/M);$$

and the approximate formulas (see §§ 10, 11, p. xiv)

$$\log_{10}(1 \pm x) = \pm x \cdot M \quad \text{and} \quad 10^{\pm x} = 1 \pm (1/M)x.$$

IX. VALUES AND LOGARITHMS OF HYPERBOLIC FUNCTIONS

19. Hyperbolic Functions. This table gives the values of e^x , e^{-x} , $\sinh x$, $\cosh x$, $\tanh x$; and the logarithms of e^x , $\sinh x$, $\cosh x$, at varying intervals from $x = 0$ to $x = 10$. It is to be noted that $\log e^{-x} = -\log e^x$ and $\log \tanh x = \log \sinh x - \log \cosh x$. The table may be extended indefinitely by means of Table VIII, since $\log_{10} e^x = x \cdot M$; for this reason Table VIII may be regarded as a table of values of $\log_{10} e^x$.

X. VALUES AND LOGARITHMS OF HAVERSINES

20. Haversines. This table gives the values and the logarithms of the haversines of angles from 0° to 180° at intervals of $10'$. The haversine, which means *half of the versed sine*, is

$$\text{hav } A = (1/2) \text{ vers } A = (1/2)(1 - \cos A);$$

hence its values to five places may be computed from the table of cosines. It is used extensively in navigation, and it may be used to advantage in the solution of ordinary oblique triangles.

XI. FACTOR TABLE—LOGARITHMS OF PRIMES

21. Factors of Composite Numbers. Logarithms of Primes. The uses of this table are evident in questions involving factoring, and for finding high-place logarithms of numbers whose prime factors are less than 2018.

We shall illustrate the finding of logarithms of other numbers by finding $\log \pi$. Taking $\pi = 3.1415926536$, divide by 3 (the first digit), obtaining 1.0471975512 Divide this quotient by 1.047 (in general, by the nearest first four digits), obtaining 1.000188683 By Table VIII, the approximate formula $\log(1 \pm x) = \pm x \cdot M$ gives

$\log 1.000188683 = .000081943$	(Table VIII)
$\log 3 = .4771212547$	(Table XI)
$\log 1.047 = \log 3 + \log .349 = .0199466817$	(Table XI)
$\log \pi = .497149879$	

while the true value of $\log \pi$ is .49714987269, so that the error is less than 1 in the eighth place. In general, this process will give the logarithm of *any* number to within 6 in the eighth decimal place, and the *probable error* is less than 1.5 in the eighth place. For still greater accuracy, see Table Ia and § 10.

XII. INTEREST TABLES

22. Interest Tables. Tables XII *a, b, c, d* give compound interest and annuity data for various per cents up to fifty years. Aside from the obvious uses, formulas involving this data will be found in works on statistics, accounting, and the mathematics of business.

Table XIIe gives the logarithms of $(1 + r)$ to fifteen places, for all ordinary values of r from $1/2\%$ to 10% . For other values of r , $\log(1 + r)$ may be computed from Table 1a (see § 10). The final result in interest calculations may be obtained to nine significant figures by the antilogarithms of Table 1a (see § 11).

Table XII*f* is the American Experience Mortality Table.

XIV. FOUR-PLACE TABLES

23. Four-place Tables. These are duplicates of the preceding five-place tables, reduced to four places, and with larger intervals between the tabulations. The value of such four-place tables consists in the greater speed with which they can be used, in case the degree of accuracy they afford is sufficient for the purpose in hand.

XIVa. Logarithms of Numbers. The only special feature of this table is that *the proportional parts are printed for every tenth in every row*; hence the logarithm of any number of *four* significant figures can be read directly.

XIVb. Antilogarithms. This table will be found to facilitate approximate calculations to a marked degree. The proportional parts are stated in the right-hand margin for each row separately. This arrangement, with the corresponding one in Table XIVa, makes the tables *effectively* four-place each way.

XIVc. Values and Logarithms of Trigonometric Functions. In this table, the values of $\sin \alpha$, $\cos \alpha$, $\tan \alpha$, $\cot \alpha$, and their common logarithms, are stated for each 10-minute interval in α . The characteristics of the logarithms are omitted, since they can be supplied readily from the value.

24. Sources and Checks used. In arranging all of these tables, several extant tables have been used as sources; and the proofs have been read against the standard seven-place tables of Vega, and at least one other table, or against at least two independent sources when the figures are not given by Vega. In all cases, the stereotyped plates have been proof-read five times, by three different persons.

In case of apparent doubt, especially in the last place of decimals, the values have been recomputed, either by series or by the condensed fifteen-place tables of Hoüel.

While errors may occur, it is believed that they must be purely typographical; in most cases such an error is revealed by the unreasonable differences it creates.

Greek Alphabet

LETTERS	NAMES	LETTERS	NAMES	LETTERS	NAMES	LETTERS	NAMES
A α	Alpha	H η	Eta	N ν	Nu	T τ	Tau
B β	Beta	Θ θ	Theta	Ξ ξ	Xi	Υ υ	Upsilon
Γ γ	Gamma	I ι	Iota	Ο ο	Omicron	Φ φ	Phi
Δ δ	Delta	K κ	Kappa	Π π	Pi	Χ χ	Chi
E ε	Epsilon	Λ λ	Lambda	Ρ ρ	Rho	Ψ ψ	Psi
Z ζ	Zeta	Μ μ	Mu	Σ σ ς	Sigma	Ω ω	Omega

LOGARITHMIC AND TRIGONOMETRIC TABLES

TABLE I COMMON LOGARITHMS OF NUMBERS FROM 1 TO 10 000 TO FIVE DECIMAL PLACES

1—100

N	Log	N	Log	N	Log	N	Log	N	Log
0		20	1.30 103	40	1.60 206	60	1.77 815	80	1.90 309
1	0.00 000	21	1.32 222	41	1.61 278	61	1.78 533	81	1.90 849
2	0.30 103	22	1.34 242	42	1.62 325	62	1.79 239	82	1.91 381
3	0.47 712	23	1.36 173	43	1.63 347	63	1.79 934	83	1.91 908
4	0.60 206	24	1.38 021	44	1.64 345	64	1.80 618	84	1.92 428
5	0.69 897	25	1.39 794	45	1.65 321	65	1.81 291	85	1.92 942
6	0.77 815	26	1.41 497	46	1.66 276	66	1.81 954	86	1.93 450
7	0.84 510	27	1.43 136	47	1.67 210	67	1.82 607	87	1.93 952
8	0.90 309	28	1.44 716	48	1.68 124	68	1.83 251	88	1.94 448
9	0.95 424	29	1.46 240	49	1.69 020	69	1.83 885	89	1.94 939
10	1.00 000	30	1.47 712	50	1.69 897	70	1.84 510	90	1.95 424
11	1.04 139	31	1.49 136	51	1.70 757	71	1.85 126	91	1.95 904
12	1.07 918	32	1.50 515	52	1.71 600	72	1.85 733	92	1.96 379
13	1.11 394	33	1.51 851	53	1.72 428	73	1.86 332	93	1.96 848
14	1.14 613	34	1.53 148	54	1.73 239	74	1.86 923	94	1.97 313
15	1.17 609	35	1.54 407	55	1.74 036	75	1.87 506	95	1.97 772
16	1.20 412	36	1.55 630	56	1.74 819	76	1.88 081	96	1.98 227
17	1.23 045	37	1.56 820	57	1.75 587	77	1.88 649	97	1.98 677
18	1.25 527	38	1.57 978	58	1.76 343	78	1.89 209	98	1.99 123
19	1.27 875	39	1.59 106	59	1.77 085	79	1.89 763	99	1.99 564
N	Log	N	Log	N	Log	N	Log	N	Log

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.				
100	00 000	043	087	130	173	217	260	303	346	389					
01	432	475	518	561	604	647	689	732	775	817		44	43	42	
02	860	903	945	988	*030	*072	*115	*157	*199	*242	1	4.4	4.3	4.2	
03	01 284	326	368	410	452	494	536	578	620	662	2	8.8	8.6	8.4	
04	703	745	787	828	870	912	953	995	*036	*078	3	13.2	12.9	12.6	
05	02 119	160	202	243	284	325	366	407	449	490	4	17.6	17.2	16.8	
06	531	572	612	653	694	735	776	816	857	898	5	22.0	21.5	21.0	
07	938	979	*019	*060	*100	*141	*181	*222	*262	*302	6	26.4	25.8	25.2	
08	03 342	383	423	463	503	543	583	623	663	703	7	30.8	30.1	29.4	
09	743	782	822	862	902	941	981	*021	*060	*100	8	35.2	34.4	33.6	
											9	39.6	38.7	37.8	
110	04 139	179	218	258	297	336	376	415	454	493					
11	532	571	610	650	689	727	766	805	844	883		41	40	39	
12	922	961	999	*038	*077	*115	*154	*192	*231	*269	1	4.1	4.0	3.9	
13	05 308	346	385	423	461	500	538	576	614	652	2	8.2	8.0	7.8	
14	690	729	767	805	843	881	918	956	994	*032	3	12.3	12.0	11.7	
15	06 070	108	145	183	221	258	296	333	371	408	4	16.4	16.0	15.6	
16	446	483	521	558	595	633	670	707	744	781	5	20.5	20.0	19.5	
17	819	856	893	930	967	*004	*041	*078	*115	*151	6	24.6	24.0	23.4	
18	07 188	225	262	298	335	372	408	445	482	518	7	28.7	28.0	27.3	
19	555	591	628	664	700	737	773	809	846	882	8	32.8	32.0	31.2	
											9	36.9	36.0	35.1	
120	918	954	990	*027	*063	*099	*135	*171	*207	*243					
21	08 279	314	350	386	422	458	493	529	565	600		38	37	36	
22	636	672	707	743	778	814	849	884	920	955	1	3.8	3.7	3.6	
23	991	*026	*061	*096	*132	*167	*202	*237	*272	*307	2	7.6	7.4	7.2	
24	09 342	377	412	447	482	517	552	587	621	656	3	11.4	11.1	10.8	
25	691	726	760	795	830	864	899	934	968	*003	4	15.2	14.8	14.4	
26	10 037	072	106	140	175	209	243	278	312	346	5	19.0	18.5	18.0	
27	380	415	449	483	517	551	585	619	653	687	6	22.8	22.2	21.6	
28	721	755	789	823	857	890	924	958	992	*025	7	26.6	25.9	25.2	
29	11 059	093	126	160	193	227	261	294	327	361	8	30.4	29.6	28.8	
											9	34.2	33.3	32.4	
130	394	428	461	494	528	561	594	628	661	694					
31	727	760	793	826	860	893	926	959	992	*024		35	34	33	
32	12 057	090	123	156	189	222	254	287	320	352	1	3.5	3.4	3.3	
33	385	418	450	483	516	548	581	613	646	678	2	7.0	6.8	6.6	
34	710	743	775	808	840	872	905	937	969	*001	3	10.5	10.2	9.9	
35	13 033	066	098	130	162	194	226	258	290	322	4	14.0	13.6	13.2	
36	354	386	418	450	481	513	545	577	609	640	5	17.5	17.0	16.5	
37	672	704	735	767	799	830	862	893	925	956	6	21.0	20.4	19.8	
38	988	*019	*051	*082	*114	*145	*176	*208	*239	*270	7	24.5	23.8	23.1	
39	14 301	333	364	395	426	457	489	520	551	582	8	28.0	27.2	26.4	
											9	31.5	30.6	29.7	
140	613	644	675	706	737	768	799	829	860	891					
41	922	953	983	*014	*045	*076	*106	*137	*168	*198		32	31	30	
42	15 229	259	290	320	351	381	412	442	473	503	1	3.2	3.1	3.0	
43	534	564	594	625	655	685	715	746	776	806	2	6.4	6.2	6.0	
44	836	866	897	927	957	987	*017	*047	*077	*107	3	9.6	9.3	9.0	
45	16 137	167	197	227	256	286	316	346	376	406	4	12.8	12.4	12.0	
46	435	465	495	524	554	584	613	643	673	702	5	16.0	15.5	15.0	
47	732	761	791	820	850	879	909	938	967	997	6	19.2	18.6	18.0	
48	17 026	056	085	114	143	173	202	231	260	289	7	22.4	21.7	21.0	
49	319	348	377	406	435	464	493	522	551	580	8	25.6	24.8	24.0	
											9	28.8	27.9	27.0	
150	609	638	667	696	725	754	782	811	840	869					
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.				

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			
150	17 609	638	667	696	725	754	782	811	840	869				
51	898	926	955	984	*013	*041	*070	*099	*127	*156				
52	18 184	213	241	270	298	327	355	384	412	441				
53	469	498	526	554	583	611	639	667	696	724				
54	752	780	808	837	865	898	921	949	977	*005				
55	19 033	061	089	117	145	173	201	229	257	285				
56	312	340	368	396	424	451	479	507	535	562				
57	590	618	645	673	700	728	756	783	811	838				
58	866	893	921	948	976	*003	*030	*058	*085	*112				
59	20 140	167	194	222	249	276	303	330	358	385				
160	412	439	466	493	520	548	575	602	629	656				
61	683	710	737	763	790	817	844	871	898	925		29	28	27
62	952	978	*005	*032	*059	*085	*112	*139	*165	*192	1	2.9	2.8	2.7
63	21 219	245	272	299	325	352	378	405	431	458	2	5.8	5.6	5.4
64	484	511	537	564	590	617	643	669	696	722	3	8.7	8.4	8.1
65	748	775	801	827	854	880	906	932	958	985	4	11.6	11.2	10.8
66	22 011	037	063	089	115	141	167	194	220	246	5	14.5	14.0	13.5
67	272	298	324	350	376	401	427	453	479	505	6	17.4	16.8	16.2
68	531	557	583	608	634	660	686	712	737	763	7	20.3	19.6	18.9
69	789	814	840	866	891	917	943	968	994	*019	8	23.2	22.4	21.6
170	23 045	070	096	121	147	172	198	223	249	274	9	26.1	25.2	24.3
71	300	325	350	376	401	426	452	477	502	528		26	25	24
72	553	578	603	629	654	679	704	729	754	779	1	2.6	2.5	2.4
73	805	830	855	880	905	930	955	980	*005	*030	2	5.2	5.0	4.8
74	24 055	080	105	130	155	180	204	229	254	279	3	7.8	7.5	7.2
75	304	329	353	378	403	428	452	477	502	527	4	10.4	10.0	9.6
76	551	576	601	625	650	674	699	724	748	773	5	13.0	12.5	12.0
77	797	822	846	871	895	920	944	969	993	*018	6	15.6	15.0	14.4
78	25 042	066	091	115	139	164	188	212	237	261	7	18.2	17.5	16.8
79	285	310	334	358	382	406	431	455	479	503	8	20.8	20.0	19.2
180	527	551	575	600	624	648	672	696	720	744	9	23.4	22.5	21.6
81	768	792	816	840	864	888	912	935	959	983		23	22	21
82	26 007	031	055	079	102	126	150	174	198	221	1	2.3	2.2	2.1
83	245	269	293	316	340	364	387	411	435	458	2	4.6	4.4	4.2
84	482	505	529	553	576	600	623	647	670	694	3	6.9	6.6	6.3
85	717	741	764	788	811	834	858	881	905	928	4	9.2	8.8	8.4
86	951	975	998	*021	*045	*068	*091	*114	*138	*161	5	11.5	11.0	10.5
87	27 184	207	231	254	277	300	323	346	370	393	6	13.8	13.2	12.6
88	416	439	462	485	508	531	554	577	600	623	7	16.1	15.4	14.7
89	646	669	692	715	738	761	784	807	830	852	8	18.4	17.6	16.8
190	875	898	921	944	967	989	*012	*035	*058	*081	9	20.7	19.8	18.9
91	28 103	126	149	171	194	217	240	262	285	307				
92	330	353	375	398	421	443	466	488	511	533				
93	556	578	601	623	646	668	691	713	735	758				
94	780	803	825	847	870	892	914	937	959	981				
95	29 003	026	048	070	092	115	137	159	181	203				
96	226	248	270	292	314	336	358	380	403	425				
97	447	469	491	513	535	557	579	601	623	645				
98	667	688	710	732	754	776	798	820	842	863				
99	885	907	929	951	973	994	*016	*038	*060	*081				
200	30 103	125	146	168	190	211	233	255	276	298				
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			
200	30 103	125	146	168	190	211	233	255	276	298	log 2 = .30102 99957			
01	320	341	363	384	406	428	449	471	492	514				
02	535	557	578	600	621	643	664	685	707	728				
03	750	771	792	814	835	856	878	899	920	942				
04	963	984	*006	*027	*048	*069	*091	*112	*133	*154				
05	31 175	197	218	239	260	281	302	323	345	366				
06	387	408	429	450	471	492	513	534	555	576				
07	597	618	639	660	681	702	723	744	765	785				
08	806	827	848	869	890	911	931	952	973	994				
09	32 015	035	056	077	098	118	139	160	181	201				
210	222	243	263	284	305	325	346	366	387	408				
11	428	449	469	490	510	531	552	572	593	613	22	21	20	
12	634	654	675	695	715	736	756	777	797	818	1	2.2	2.1	2.0
13	838	858	879	899	919	940	960	980	*001	*021	2	4.4	4.2	4.0
14	33 041	062	082	102	122	143	163	183	203	224	3	6.6	6.3	6.0
15	244	264	284	304	325	345	365	385	405	425	4	8.8	8.4	8.0
16	445	465	486	506	526	546	566	586	606	626	5	11.0	10.5	10.0
17	646	666	686	706	726	746	766	786	806	826	6	13.2	12.6	12.0
18	846	866	885	905	925	945	965	985	*005	*025	7	15.4	14.7	14.0
19	34 041	061	081	101	121	141	161	181	201	221	8	17.6	16.8	16.0
220	242	262	282	301	321	341	361	380	400	420	9	19.8	18.9	18.0
21	439	459	479	498	518	537	557	577	596	616				
22	635	655	674	694	713	733	753	772	792	811				
23	830	850	869	889	908	928	947	967	986	*005				
24	35 025	044	064	083	102	122	141	160	180	199				
25	218	238	257	276	295	315	334	353	372	392				
26	411	430	449	468	488	507	526	545	564	583				
27	603	622	641	660	679	698	717	736	755	774				
28	793	813	832	851	870	889	908	927	946	965				
29	984	*003	*021	*040	*059	*078	*097	*116	*135	*154				
230	36 173	192	211	229	248	267	286	305	324	342				
31	361	380	399	418	436	455	474	493	511	530	19	18	17	
32	549	568	586	605	624	642	661	680	698	717	1	1.9	1.8	1.7
33	736	754	773	791	810	829	847	866	884	903	2	3.8	3.6	3.4
34	922	940	959	977	996	*014	*033	*051	*070	*088	3	5.7	5.4	5.1
35	37 107	125	144	162	181	199	218	236	254	273	4	7.6	7.2	6.8
36	291	310	328	346	365	383	401	420	438	457	5	9.5	9.0	8.5
37	475	493	511	530	548	566	585	603	621	639	6	11.4	10.8	10.2
38	658	676	694	712	731	749	767	785	803	822	7	13.3	12.6	11.9
39	840	858	876	894	912	931	949	967	985	*003	8	15.2	14.4	13.6
240	38 021	039	057	075	093	112	130	148	166	184	9	17.1	16.2	15.3
41	202	220	238	256	274	292	310	328	346	364				
42	382	399	417	435	453	471	489	507	525	543				
43	561	578	596	614	632	650	668	686	703	721				
44	739	757	775	792	810	828	846	863	881	899				
45	917	934	952	970	987	*005	*023	*041	*058	*076				
46	39 094	111	129	146	164	182	199	217	235	252				
47	270	287	305	322	340	358	375	393	410	428				
48	445	463	480	498	515	533	550	568	585	602				
49	620	637	655	672	690	707	724	742	759	777				
250	794	811	829	846	863	881	898	915	933	950				
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
250	39 794	811	829	846	863	881	898	915	933	950	
51	967	985	*002	*019	*037	*054	*071	*088	*106	*123	
52	40 140	157	175	192	209	226	243	261	278	295	
53	312	329	346	364	381	398	415	432	449	466	
54	483	500	518	535	552	569	586	603	620	637	
55	654	671	688	705	722	739	756	773	790	807	
56	824	841	858	875	892	909	926	943	960	976	
57	993	*010	*027	*044	*061	*078	*095	*111	*128	*145	
58	41 162	179	196	212	229	246	263	280	296	313	
59	330	347	363	380	397	414	430	447	464	481	
260	497	514	531	547	564	581	597	614	631	647	
61	664	681	697	714	731	747	764	780	797	814	
62	830	847	863	880	896	913	929	946	963	979	
63	996	*012	*029	*045	*062	*078	*095	*111	*127	*144	
64	42 160	177	193	210	226	243	259	275	292	308	
65	325	341	357	374	390	406	423	439	455	472	
66	488	504	521	537	553	570	586	602	619	635	
67	651	667	684	700	716	732	749	765	781	797	
68	813	830	846	862	878	894	911	927	943	959	
69	975	991	*008	*024	*040	*056	*072	*088	*104	*120	
270	43 136	152	169	185	201	217	233	249	265	281	
71	297	313	329	345	361	377	393	409	425	441	
72	457	473	489	505	521	537	553	569	584	600	
73	616	632	648	664	680	696	712	727	743	759	
74	775	791	807	823	838	854	870	886	902	917	
75	933	949	965	981	996	*012	*028	*044	*059	*075	
76	44 091	107	122	138	154	170	185	201	217	232	
77	248	264	279	295	311	326	342	358	373	389	
78	404	420	436	451	467	483	498	514	529	545	
79	560	576	592	607	623	638	654	669	685	700	
280	716	731	747	762	778	793	809	824	840	855	
81	871	886	902	917	932	948	963	979	994	*010	
82	45 025	040	056	071	086	102	117	133	148	163	
83	179	194	209	225	240	255	271	286	301	317	
84	332	347	362	378	393	408	423	439	454	469	
85	484	500	515	530	545	561	576	591	606	621	
86	637	652	667	682	697	712	728	743	758	773	
87	788	803	818	834	849	864	879	894	909	924	
88	939	954	969	984	*000	*015	*030	*045	*060	*075	
89	46 090	105	120	135	150	165	180	195	210	225	
290	240	255	270	285	300	315	330	345	359	374	
91	389	404	419	434	449	464	479	494	509	523	
92	538	553	568	583	598	613	627	642	657	672	
93	687	702	716	731	746	761	776	790	805	820	
94	835	850	864	879	894	909	923	938	953	967	
95	982	997	*012	*026	*041	*056	*070	*085	*100	*114	
96	47 129	144	159	173	188	202	217	232	246	261	
97	276	290	305	319	334	349	363	378	392	407	
98	422	436	451	465	480	494	509	524	538	553	
99	567	582	596	611	625	640	654	669	683	698	
300	712	727	741	756	770	784	799	813	828	842	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

18 17 16

1	1.8	1.7	1.6
2	3.6	3.4	3.2
3	5.4	5.1	4.8
4	7.2	6.8	6.4
5	9.0	8.5	8.0
6	10.8	10.2	9.6
7	12.6	11.9	11.2
8	14.4	13.6	12.8
9	16.2	15.3	14.4

$M = \log_{10} e$
 $= \log_{10} 2.718...$
 $= .4342944819$

15 14

1	1.5	1.4
2	3.0	2.8
3	4.5	4.2
4	6.0	5.6
5	7.5	7.0
6	9.0	8.4
7	10.5	9.8
8	12.0	11.2
9	13.5	12.6

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		
300	47 712	727	741	756	770	784	799	813	828	842	log 3 = .47712 12547 log π = .49714 98727	15 1.5 3.0 4.5 6.0 7.5 9.0 10.5 12.0 13.5	14 1.4 2.8 4.2 5.6 7.0 8.4 9.8 11.2 12.6
01	857	871	885	900	914	929	943	958	972	986			
02	48 001	015	029	044	058	073	087	101	116	130			
03	144	159	173	187	202	216	230	244	259	273			
04	287	302	316	330	344	359	373	387	401	416			
05	430	444	458	473	487	501	515	530	544	558			
06	572	586	601	615	629	643	657	671	686	700			
07	714	728	742	756	770	785	799	813	827	841			
08	855	869	883	897	911	926	940	954	968	982			
09	996	*010	*024	*038	*052	*066	*080	*094	*108	*122			
310	49 136	150	164	178	192	206	220	234	248	262			
11	276	290	304	318	332	346	360	374	388	402			
12	415	429	443	457	471	485	499	513	527	541			
13	554	568	582	596	610	624	638	651	665	679			
14	693	707	721	734	748	762	776	790	803	817			
15	831	845	859	872	886	900	914	927	941	955			
16	969	982	996	*010	*024	*037	*051	*065	*079	*092			
17	50 106	120	133	147	161	174	188	202	215	229			
18	243	256	270	284	297	311	325	338	352	365			
19	379	393	406	420	433	447	461	474	488	501			
320	515	529	542	556	569	583	596	610	623	637			
21	651	664	678	691	705	718	732	745	759	772			
22	786	799	813	826	840	853	866	880	893	907			
23	920	934	947	961	974	987	*001	*014	*028	*041			
24	51 055	068	081	095	108	121	135	148	162	175			
25	188	202	215	228	242	255	268	282	295	308			
26	322	335	348	362	375	388	402	415	428	441			
27	455	468	481	495	508	521	534	548	561	574			
28	587	601	614	627	640	654	667	680	693	706			
29	720	733	746	759	772	786	799	812	825	838			
330	851	865	878	891	904	917	930	943	957	970			
31	983	996	*009	*022	*035	*048	*061	*075	*088	*101			
32	52 114	127	140	153	166	179	192	205	218	231			
33	244	257	270	284	297	310	323	336	349	362			
34	375	388	401	414	427	440	453	466	479	492			
35	501	517	530	543	556	569	582	595	608	621			
36	634	647	660	673	686	699	711	724	737	750			
37	763	776	789	802	815	827	840	853	866	879			
38	892	905	917	930	943	956	969	982	994	*007			
39	53 020	033	046	058	071	084	097	110	122	135			
340	148	161	173	186	199	212	224	237	250	263			
41	275	288	301	314	326	339	352	364	377	390			
42	403	415	428	441	453	466	479	491	504	517			
43	529	542	555	567	580	593	605	618	631	643			
44	656	668	681	694	706	719	732	744	757	769			
45	782	794	807	820	832	845	857	870	882	895			
46	908	920	933	945	958	970	983	995	*008	*020			
47	54 033	045	058	070	083	095	108	120	133	145			
48	158	170	183	195	208	220	233	245	258	270			
49	283	295	307	320	332	345	357	370	382	394			
350	407	419	432	444	456	469	481	494	506	518			
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
350	54 407	419	432	444	456	469	481	494	506	518	
51	531	543	555	568	580	593	605	617	630	642	
52	654	667	679	691	704	716	728	741	753	765	
53	777	790	802	814	827	839	851	864	876	888	
54	900	913	925	937	949	962	974	986	998	*011	
55	55 023	035	047	060	072	084	096	108	121	133	
56	145	157	169	182	194	206	218	230	242	255	
57	267	279	291	303	315	328	340	352	364	376	
58	388	400	413	425	437	449	461	473	485	497	
59	509	522	534	546	558	570	582	594	606	618	
360	630	642	654	666	678	691	703	715	727	739	
61	751	763	775	787	799	811	823	835	847	859	
62	871	883	895	907	919	931	943	955	967	979	
63	991	*003	*015	*027	*038	*050	*062	*074	*086	*098	
64	56 110	122	134	146	158	170	182	194	205	217	
65	229	241	253	265	277	289	301	312	324	336	
66	348	360	372	384	396	407	419	431	443	455	
67	467	478	490	502	514	526	538	549	561	573	
68	585	597	608	620	632	644	656	667	679	691	
69	705	714	726	738	750	761	773	785	797	808	
370	820	832	844	855	867	879	891	902	914	926	
71	937	949	961	972	984	996	*008	*019	*031	*043	
72	57 054	066	078	089	101	113	124	136	148	159	
73	171	183	194	206	217	229	241	252	264	276	
74	287	299	310	322	334	345	357	368	380	392	
75	403	415	426	438	449	461	473	484	496	507	
76	519	530	542	553	565	576	588	600	611	623	
77	634	646	657	669	680	692	703	715	726	738	
78	749	761	772	784	795	807	818	830	841	852	
79	864	875	887	898	910	921	933	944	955	967	
380	978	990	*001	*013	*024	*035	*047	*058	*070	*081	
81	58 092	104	115	127	138	149	161	172	184	195	
82	206	218	229	240	252	263	274	286	297	309	
83	320	331	343	354	365	377	388	399	410	422	
84	433	444	456	467	478	490	501	512	524	535	
85	546	557	569	580	591	602	614	625	636	647	
86	659	670	681	692	704	715	726	737	749	760	
87	771	782	794	805	816	827	838	850	861	872	
88	883	894	905	917	928	939	950	961	973	984	
89	995	*006	*017	*028	*040	*051	*062	*073	*084	*095	
390	59 106	118	129	140	151	162	173	184	195	207	
91	218	229	240	251	262	273	284	295	306	318	
92	329	340	351	362	373	384	395	406	417	428	
93	439	450	461	472	483	494	506	517	528	539	
94	550	561	572	583	594	605	616	627	638	649	
95	660	671	682	693	704	715	726	737	748	759	
96	770	780	791	802	813	824	835	846	857	868	
97	879	890	901	912	923	934	945	956	966	977	
98	988	999	*010	*021	*032	*043	*054	*065	*076	*086	
99	60 097	108	119	130	141	152	163	173	184	195	
400	206	217	228	239	249	260	271	282	293	304	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	13	12
1	1.3	1.2
2	2.6	2.4
3	3.9	3.6
4	5.2	4.8
5	6.5	6.0
6	7.8	7.2
7	9.1	8.4
8	10.4	9.6
9	11.7	10.8

	11	10
1	1.1	1.0
2	2.2	2.0
3	3.3	3.0
4	4.4	4.0
5	5.5	5.0
6	6.6	6.0
7	7.7	7.0
8	8.8	8.0
9	9.9	9.0

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
400	60 206	217	228	239	249	260	271	282	293	304	
01	314	325	336	347	358	369	379	390	401	412	
02	423	433	444	455	466	477	487	498	509	520	
03	531	541	552	563	574	584	595	606	617	627	
04	638	649	660	670	681	692	703	713	724	735	
05	746	756	767	778	788	799	810	821	831	842	
06	853	863	874	885	895	906	917	927	938	949	
07	959	970	981	991	*002	*013	*023	*034	*045	*055	
08	61 066	077	087	098	109	119	130	140	151	162	
09	172	183	194	204	215	225	236	247	257	268	
410	278	289	300	310	321	331	342	352	363	374	
11	384	395	405	416	426	437	448	458	469	479	
12	490	500	511	521	532	542	553	563	574	584	
13	595	606	616	627	637	648	658	669	679	690	
14	700	711	721	731	742	752	763	773	784	794	
15	805	815	826	836	847	857	868	878	888	899	
16	909	920	930	941	951	962	972	982	993	*003	
17	62 014	024	034	045	055	066	076	086	097	107	
18	118	128	138	149	159	170	180	190	201	211	
19	221	232	242	252	263	273	284	294	304	315	
420	325	335	346	356	366	377	387	397	408	418	
21	428	439	449	459	469	480	490	500	511	521	
22	531	542	552	562	572	583	593	603	613	624	
23	634	644	655	665	675	685	696	706	716	726	
24	737	747	757	767	778	788	798	808	818	829	
25	839	849	859	870	880	890	900	910	921	931	
26	941	951	961	972	982	992	*002	*012	*022	*033	
27	63 043	053	063	073	083	094	104	114	124	134	
28	144	155	165	175	185	195	205	215	225	236	
29	246	256	266	276	286	296	306	317	327	337	
430	347	357	367	377	387	397	407	417	428	438	
31	448	458	468	478	488	498	508	518	528	538	
32	548	558	568	579	589	599	609	619	629	639	
33	649	659	669	679	689	699	709	719	729	739	
34	749	759	769	779	789	799	809	819	829	839	
35	849	859	869	879	889	899	909	919	929	939	
36	949	959	969	979	988	998	*008	*018	*028	*038	
37	64 018	058	068	078	088	098	108	118	128	137	
38	147	157	167	177	187	197	207	217	227	237	
39	246	256	266	276	286	296	306	316	326	335	
440	345	355	365	375	385	395	404	414	424	434	
41	444	454	464	473	483	493	503	513	523	532	
42	542	552	562	572	582	591	601	611	621	631	
43	640	650	660	670	680	689	699	709	719	729	
44	738	748	758	768	777	787	797	807	816	826	
45	836	846	856	865	875	885	895	904	914	924	
46	933	943	953	963	972	982	992	*002	*011	*021	
47	65 031	040	050	060	070	079	089	099	108	118	
48	128	137	147	157	167	176	186	196	205	215	
49	225	234	244	254	263	273	283	292	302	312	
450	321	331	341	350	360	369	379	389	398	408	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	11	10	9
1	1.1	1.0	0.9
2	2.2	2.0	1.8
3	3.3	3.0	2.7
4	4.4	4.0	3.6
5	5.5	5.0	4.5
6	6.6	6.0	5.4
7	7.7	7.0	6.3
8	8.8	8.0	7.2
9	9.9	9.0	8.1

log M = log [log e]
= 9.63778 431 — 10

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
450	65 321	331	341	350	360	369	379	389	398	408	
51	418	427	437	447	456	466	475	485	495	504	
52	514	523	533	543	552	562	571	581	591	600	
53	610	619	629	639	648	658	667	677	686	696	
54	706	715	725	734	744	753	763	772	782	792	
55	801	811	820	830	839	849	858	868	877	887	
56	896	906	916	925	935	944	954	963	973	982	
57	992	*001	*011	*020	*030	*039	*049	*058	*068	*077	
58	66 087	096	106	115	124	134	143	153	162	172	
59	181	191	200	210	219	229	238	247	257	266	
460	276	285	295	304	314	323	332	342	351	361	
61	370	380	389	398	408	417	427	436	445	455	
62	464	474	483	492	502	511	521	530	539	549	
63	558	567	577	586	596	605	614	624	633	642	
64	652	661	671	680	689	699	708	717	727	736	
65	745	755	764	774	783	792	801	811	820	829	
66	839	848	857	867	876	885	894	904	913	922	
67	932	941	950	960	969	978	987	997	*006	*015	
68	67 025	034	043	052	062	071	080	089	099	108	
69	117	127	136	145	154	164	173	182	191	201	
470	210	219	228	237	247	256	265	274	284	293	
71	302	311	321	330	339	348	357	367	376	385	
72	394	403	413	422	431	440	449	459	468	477	
73	486	495	504	514	523	532	541	550	560	569	
74	578	587	596	605	614	624	633	642	651	660	
75	669	679	688	697	706	715	724	733	742	752	
76	761	770	779	788	797	806	815	825	834	843	
77	852	861	870	879	888	897	906	916	925	934	
78	943	952	961	970	979	988	997	*006	*015	*024	
79	68 034	043	052	061	070	079	088	097	106	115	
480	124	133	142	151	160	169	178	187	196	205	
81	215	224	233	242	251	260	269	278	287	296	
82	305	314	323	332	341	350	359	368	377	386	
83	395	404	413	422	431	440	449	458	467	476	
84	485	494	502	511	520	529	538	547	556	565	
85	574	583	592	601	610	619	628	637	646	655	
86	664	673	681	690	699	708	717	726	735	744	
87	753	762	771	780	789	797	806	815	824	833	
88	842	851	860	869	878	886	895	904	913	922	
89	931	940	949	958	966	975	984	993	*002	*011	
490	69 020	028	037	046	055	064	073	082	090	099	
91	108	117	126	135	144	152	161	170	179	188	
92	197	205	214	223	232	241	249	258	267	276	
93	285	294	302	311	320	329	338	346	355	364	
94	373	381	390	399	408	417	425	434	443	452	
95	461	469	478	487	496	504	513	522	531	539	
96	548	557	566	574	583	592	601	609	618	627	
97	636	644	653	662	671	679	688	697	705	714	
98	723	732	740	749	758	767	775	784	793	801	
99	810	819	827	836	845	854	862	871	880	888	
500	897	906	914	923	932	940	949	958	966	975	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	10	9	8
1	1.0	0.9	0.8
2	2.0	1.8	1.6
3	3.0	2.7	2.4
4	4.0	3.6	3.2
5	5.0	4.5	4.0
6	6.0	5.4	4.8
7	7.0	6.3	5.6
8	8.0	7.2	6.4
9	9.0	8.1	7.2

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
500	69 897	906	914	923	932	940	949	958	966	975	log 5 = .69897 00043
01	984	992	*001	*010	*018	*027	*036	*044	*053	*062	
02	70 070	079	088	096	105	114	122	131	140	148	
03	157	165	174	183	191	200	209	217	226	234	
04	243	252	260	269	278	286	295	303	312	321	
05	329	338	346	355	364	372	381	389	398	406	
06	415	424	432	441	449	458	467	475	484	492	
07	501	509	518	526	535	544	552	561	569	578	
08	586	595	603	612	621	629	638	646	655	663	
09	672	680	689	697	706	714	723	731	740	749	
510	757	766	774	783	791	800	808	817	825	834	
11	842	851	859	868	876	885	893	902	910	919	
12	927	935	944	952	961	969	978	986	995	*003	
13	71 012	020	029	037	046	054	063	071	079	088	
14	096	105	113	122	130	139	147	155	164	172	
15	181	189	198	206	214	223	231	240	248	257	
16	265	273	282	290	299	307	315	324	332	341	
17	349	357	366	374	383	391	399	408	416	425	
18	433	441	450	458	466	475	483	492	500	508	
19	517	525	533	542	550	559	567	575	584	592	
520	600	609	617	625	634	642	650	659	667	675	
21	684	692	700	709	717	725	734	742	750	759	
22	767	775	784	792	800	809	817	825	834	842	
23	850	858	867	875	883	892	900	908	917	925	
24	933	941	950	958	966	975	983	991	999	*008	
25	72 016	024	032	041	049	057	066	074	082	090	
26	099	107	115	123	132	140	148	156	165	173	
27	181	189	198	206	214	222	230	239	247	255	
28	263	272	280	288	296	304	313	321	329	337	
29	346	354	362	370	378	387	395	403	411	419	
530	428	436	444	452	460	469	477	485	493	501	
31	509	518	526	534	542	550	558	567	575	583	
32	591	599	607	616	624	632	640	648	656	665	
33	673	681	689	697	705	713	722	730	738	746	
34	754	762	770	779	787	795	803	811	819	827	
35	835	843	852	860	868	876	884	892	900	908	
36	916	925	933	941	949	957	965	973	981	989	
37	997	*006	*014	*022	*030	*038	*046	*054	*062	*070	
38	73 078	086	094	102	111	119	127	135	143	151	
39	159	167	175	183	191	199	207	215	223	231	
540	239	247	255	263	272	280	288	296	304	312	
41	320	328	336	344	352	360	368	376	384	392	
42	400	408	416	424	432	440	448	456	464	472	
43	480	488	496	504	512	520	528	536	544	552	
44	560	568	576	584	592	600	608	616	624	632	
45	640	648	656	664	672	679	687	695	703	711	
46	719	727	735	743	751	759	767	775	783	791	
47	799	807	815	823	830	838	846	854	862	870	
48	878	886	894	902	910	918	926	933	941	949	
49	957	965	973	981	989	997	*005	*013	*020	*028	
550	74 036	044	052	060	068	076	084	092	099	107	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
550	74 036	044	052	060	068	076	084	092	099	107	
51	115	123	131	139	147	155	162	170	178	186	
52	194	202	210	218	225	233	241	249	257	265	
53	273	280	288	296	304	312	320	327	335	343	
54	351	359	367	374	382	390	398	406	414	421	
55	429	437	445	453	461	468	476	484	492	500	
56	507	515	523	531	539	547	554	562	570	578	
57	586	593	601	609	617	624	632	640	648	656	
58	663	671	679	687	695	702	710	718	726	733	
59	741	749	757	764	772	780	788	796	803	811	
560	819	827	834	842	850	858	865	873	881	889	
61	896	904	912	920	927	935	943	950	958	966	
62	974	981	989	997	*005	*012	*020	*028	*035	*043	
63	75 051	059	066	074	082	089	097	105	113	120	
64	128	136	143	151	159	166	174	182	189	197	
65	205	213	220	228	236	243	251	259	266	274	
66	282	289	297	305	312	320	328	335	343	351	
67	358	366	374	381	389	397	404	412	420	427	
68	435	442	450	458	465	473	481	488	496	504	
69	511	519	526	534	542	549	557	565	572	580	
570	587	595	603	610	618	626	633	641	648	656	
71	664	671	679	686	694	702	709	717	724	732	
72	740	747	755	762	770	778	785	793	800	808	
73	815	823	831	838	846	853	861	868	876	884	
74	891	899	906	914	921	929	937	944	952	959	
75	967	974	982	989	997	*005	*012	*020	*027	*035	
76	76 042	050	057	065	072	080	087	095	103	110	
77	118	125	133	140	148	155	163	170	178	185	
78	193	200	208	215	223	230	238	245	253	260	
79	268	275	283	290	298	305	313	320	328	335	
580	343	350	358	365	373	380	388	395	403	410	
81	418	425	433	440	448	455	462	470	477	485	
82	492	500	507	515	522	530	537	545	552	559	
83	567	574	582	589	597	604	612	619	626	634	
84	641	649	656	664	671	678	686	693	701	708	
85	716	723	730	738	745	753	760	768	775	782	
86	790	797	805	812	819	827	834	842	849	856	
87	864	871	879	886	893	901	908	916	923	930	
88	938	945	953	960	967	975	982	989	997	*004	
89	77 012	019	026	034	041	048	056	063	070	078	
590	085	093	100	107	115	122	129	137	144	151	
91	159	166	173	181	188	195	203	210	217	225	
92	232	240	247	254	262	269	276	283	291	298	
93	305	313	320	327	335	342	349	357	364	371	
94	379	386	393	401	408	415	422	430	437	444	
95	452	459	466	474	481	488	495	503	510	517	
96	525	532	539	546	554	561	568	576	583	590	
97	597	605	612	619	627	634	641	648	656	663	
98	670	677	685	692	699	706	714	721	728	735	
99	743	750	757	764	772	779	786	793	801	808	
600	815	822	830	837	844	851	859	866	873	880	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	8	7
1	0.8	0.7
2	1.6	1.4
3	2.4	2.1
4	3.2	2.8
5	4.0	3.5
6	4.8	4.2
7	5.6	4.9
8	6.4	5.6
9	7.2	6.3

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		
600	77 815	822	830	837	844	851	859	866	873	880			
01	887	895	902	909	916	924	931	938	945	952			
02	960	967	974	981	988	996	*003	*010	*017	*025			
03	78 032	039	046	053	061	068	075	082	089	097			
04	104	111	118	125	132	140	147	154	161	168			
05	176	183	190	197	204	211	219	226	233	240			
06	247	254	262	269	276	283	290	297	305	312			
07	319	326	333	340	347	355	362	369	376	383			
08	390	398	405	412	419	426	433	440	447	455			
09	462	469	476	483	490	497	504	512	519	526			
610	533	540	547	554	561	569	576	583	590	597			
11	604	611	618	625	633	640	647	654	661	668			
12	675	682	689	696	704	711	718	725	732	739			
13	746	753	760	767	774	781	789	796	803	810			
14	817	824	831	838	845	852	859	866	873	880			
15	888	895	902	909	916	923	930	937	944	951			
16	958	965	972	979	986	993	*000	*007	*014	*021			
17	79 029	036	043	050	057	064	071	078	085	092			
18	099	106	113	120	127	134	141	148	155	162			
19	169	176	183	190	197	204	211	218	225	232			
620	239	246	253	260	267	274	281	288	295	302			
21	309	316	323	330	337	344	351	358	365	372			
22	379	386	393	400	407	414	421	428	435	442			
23	449	456	463	470	477	484	491	498	505	511			
24	518	525	532	539	546	553	560	567	574	581			
25	588	595	602	609	616	623	630	637	644	650			
26	657	664	671	678	685	692	699	706	713	720			
27	727	734	741	748	754	761	768	775	782	789			
28	796	803	810	817	824	831	837	844	851	858			
29	865	872	879	886	893	900	906	913	920	927			
630	934	941	948	955	962	969	975	982	989	996			
31	80 003	010	017	024	030	037	044	051	058	065			
32	072	079	085	092	099	106	113	120	127	134			
33	140	147	154	161	168	175	182	188	195	202			
34	209	216	223	229	236	243	250	257	264	271			
35	277	284	291	298	305	312	318	325	332	339			
36	346	353	359	366	373	380	387	393	400	407			
37	414	421	428	434	441	448	455	462	468	475			
38	482	489	496	502	509	516	523	530	536	543			
39	550	557	564	570	577	584	591	598	604	611			
640	618	625	632	638	645	652	659	665	672	679			
41	686	693	699	706	713	720	726	733	740	747			
42	754	760	767	774	781	787	794	801	808	814			
43	821	828	835	841	848	855	862	868	875	882			
44	889	895	902	909	916	922	929	936	943	949			
45	956	963	969	976	983	990	996	*003	*010	*017			
46	81 023	030	037	043	050	057	064	070	077	084			
47	090	097	104	111	117	124	131	137	144	151			
48	158	164	171	178	184	191	198	204	211	218			
49	224	231	238	245	251	258	265	271	278	285			
650	291	298	305	311	318	325	331	338	345	351			
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		

	8	7	6
1	0.8	0.7	0.6
2	1.6	1.4	1.2
3	2.4	2.1	1.8
4	3.2	2.8	2.4
5	4.0	3.5	3.0
6	4.8	4.2	3.6
7	5.6	4.9	4.2
8	6.4	5.6	4.8
9	7.2	6.3	5.4

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
650	81 291	298	305	311	318	325	331	338	345	351	
51	358	365	371	378	385	391	398	405	411	418	
52	425	431	438	445	451	458	465	471	478	485	
53	491	498	505	511	518	525	531	538	544	551	
54	558	564	571	578	584	591	598	604	611	617	
55	624	631	637	644	651	657	664	671	677	684	
56	690	697	704	710	717	723	730	737	743	750	
57	757	763	770	776	783	790	796	803	809	816	
58	823	829	836	842	849	856	862	869	875	882	
59	889	895	902	908	915	921	928	935	941	948	
660	954	961	968	974	981	987	994	*000	*007	*014	
61	82 020	027	033	040	046	053	060	066	073	079	
62	086	092	099	105	112	119	125	132	138	145	
63	151	158	164	171	178	184	191	197	204	210	
64	217	223	230	236	243	249	256	263	269	276	
65	282	289	295	302	308	315	321	328	334	341	
66	347	354	360	367	373	380	387	393	400	406	
67	413	419	426	432	439	445	452	458	465	471	
68	478	484	491	497	504	510	517	523	530	536	
69	543	549	556	562	569	575	582	588	595	601	
670	607	614	620	627	633	640	646	653	659	666	
71	672	679	685	692	698	705	711	718	724	730	
72	737	743	750	756	763	769	776	782	789	795	
73	802	808	814	821	827	834	840	847	853	860	
74	866	872	879	885	892	898	905	911	918	924	
75	930	937	943	950	956	963	969	975	982	988	
76	995	*001	*005	*011	*017	*023	*029	*035	*041	*047	
77	83 059	065	072	078	085	091	097	104	110	117	
78	123	129	136	142	149	155	161	168	174	181	
79	187	193	200	206	213	219	225	232	238	245	
680	251	257	264	270	276	283	289	296	302	308	
81	315	321	327	334	340	347	353	359	366	372	
82	378	385	391	398	404	410	417	423	429	436	
83	442	448	455	461	467	474	480	487	493	499	
84	506	512	518	525	531	537	544	550	556	563	
85	569	575	582	588	594	601	607	613	620	626	
86	632	639	645	651	658	664	670	677	683	689	
87	696	702	708	715	721	727	734	740	746	753	
88	759	765	771	778	784	790	797	803	809	816	
89	822	828	835	841	847	853	860	866	872	879	
690	885	891	897	904	910	916	923	929	935	942	
91	948	954	960	967	973	979	985	992	998	*004	
92	84 011	017	023	029	036	042	048	055	061	067	
93	073	080	086	092	098	105	111	117	123	130	
94	136	142	148	155	161	167	173	180	186	192	
95	198	205	211	217	223	230	236	242	248	255	
96	261	267	273	280	286	292	298	305	311	317	
97	323	330	336	342	348	354	361	367	373	379	
98	386	392	398	404	410	417	423	429	435	442	
99	448	454	460	466	473	479	485	491	497	504	
700	510	516	522	528	535	541	547	553	559	566	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	7	6
1	0.7	0.6
2	1.4	1.2
3	2.1	1.8
4	2.8	2.4
5	3.5	3.0
6	4.2	3.6
7	4.9	4.2
8	5.6	4.8
9	6.3	5.4

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			
700	84 510	516	522	528	535	541	547	553	559	566	log 7 = .84509 80400			
01	572	578	584	590	597	603	609	615	621	628				
02	634	640	646	652	658	665	671	677	683	689				
03	696	702	708	714	720	726	733	739	745	751				
04	757	763	770	776	782	788	794	800	807	813				
05	819	825	831	837	844	850	856	862	868	874				
06	880	887	893	899	905	911	917	924	930	936				
07	942	948	954	960	967	973	979	985	991	997				
08	85 003	009	016	022	028	034	040	046	052	058				
09	065	071	077	083	089	095	101	107	114	120				
710	126	132	138	144	150	156	163	169	175	181				
11	187	193	199	205	211	217	224	230	236	242				
12	248	254	260	266	272	278	285	291	297	303				
13	309	315	321	327	333	339	345	352	358	364				
14	370	376	382	388	394	400	406	412	418	425				
15	431	437	443	449	455	461	467	473	479	485				
16	491	497	503	509	516	522	528	534	540	546				
17	552	558	564	570	576	582	588	594	600	606				
18	612	618	625	631	637	643	649	655	661	667				
19	673	679	685	691	697	703	709	715	721	727				
720	733	739	745	751	757	763	769	775	781	788				
21	794	800	806	812	818	824	830	836	842	848				
22	854	860	866	872	878	884	890	896	902	908				
23	914	920	926	932	938	944	950	956	962	968				
24	974	980	986	992	998	*004	*010	*016	*022	*028				
25	86 034	040	046	052	058	064	070	076	082	088				
26	094	100	106	112	118	124	130	136	141	147				
27	153	159	165	171	177	183	189	195	201	207				
28	213	219	225	231	237	243	249	255	261	267				
29	273	279	285	291	297	303	308	314	320	326				
730	332	338	344	350	356	362	368	374	380	386				
31	392	398	404	410	415	421	427	433	439	445				
32	451	457	463	469	475	481	487	493	499	504				
33	510	516	522	528	534	540	546	552	558	564				
34	570	576	581	587	593	599	605	611	617	623				
35	629	635	641	646	652	658	664	670	676	682				
36	688	694	700	705	711	717	723	729	735	741				
37	747	753	759	764	770	776	782	788	794	800				
38	806	812	817	823	829	835	841	847	853	859				
39	864	870	876	882	888	894	900	906	911	917				
740	923	929	935	941	947	953	958	964	970	976				
41	982	988	994	999	*005	*011	*017	*023	*029	*035				
42	87 040	046	052	058	064	070	075	081	087	093				
43	099	105	111	116	122	128	134	140	146	151				
44	157	163	169	175	181	186	192	198	204	210				
45	216	221	227	233	239	245	251	256	262	268				
46	274	280	286	291	297	303	309	315	320	326				
47	332	338	344	349	355	361	367	373	379	384				
48	390	396	402	408	413	419	425	431	437	442				
49	448	454	460	466	471	477	483	489	495	500				
750	506	512	518	523	529	535	541	547	552	558				
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.			

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
750	87 506	512	518	523	529	535	541	547	552	558	
51	564	570	576	581	587	593	599	604	610	616	
52	622	628	633	639	645	651	656	662	668	674	
53	679	685	691	697	703	708	714	720	726	731	
54	737	743	749	754	760	766	772	777	783	789	
55	795	800	806	812	818	823	829	835	841	846	
56	852	858	864	869	875	881	887	892	898	904	
57	910	915	921	927	933	938	944	950	955	961	
58	967	973	978	984	990	996	*001	*007	*013	*018	
59	88 024	030	036	041	047	053	058	064	070	076	
760	081	087	093	098	104	110	116	121	127	133	
61	138	144	150	156	161	167	173	178	184	190	
62	195	201	207	213	218	224	230	235	241	247	
63	252	258	264	270	275	281	287	292	298	304	
64	309	315	321	326	332	338	343	349	355	360	
65	366	372	377	383	389	395	400	406	412	417	
66	423	429	434	440	446	451	457	463	468	474	
67	480	485	491	497	502	508	513	519	525	530	
68	536	542	547	553	559	564	570	576	581	587	
69	593	598	604	610	615	621	627	632	638	643	
770	649	655	660	666	672	677	683	689	694	700	
71	705	711	717	722	728	734	739	745	750	756	
72	762	767	773	779	784	790	795	801	807	812	
73	818	824	829	835	840	846	852	857	863	868	
74	874	880	885	891	897	902	908	913	919	925	
75	930	936	941	947	953	958	964	969	975	981	
76	986	992	997	*003	*009	*014	*020	*025	*031	*037	
77	89 042	048	053	059	064	070	076	081	087	092	
78	098	104	109	115	120	126	131	137	143	148	
79	154	159	165	170	176	182	187	193	198	204	
780	209	215	221	226	232	237	243	248	254	260	
81	265	271	276	282	287	293	298	304	310	315	
82	321	326	332	337	343	348	354	360	365	371	
83	376	382	387	393	398	404	409	415	421	426	
84	432	437	443	448	454	459	465	470	476	481	
85	487	492	498	504	509	515	520	526	531	537	
86	542	548	553	559	564	570	575	581	586	592	
87	597	603	609	614	620	625	631	636	642	647	
88	653	658	664	669	675	680	686	691	697	702	
89	708	713	719	724	730	735	741	746	752	757	
790	763	768	774	779	785	790	796	801	807	812	
91	818	823	829	834	840	845	851	856	862	867	
92	873	878	883	889	894	900	905	911	916	922	
93	927	933	938	944	949	955	960	966	971	977	
94	982	988	993	998	*004	*009	*015	*020	*026	*031	
95	90 037	042	048	053	059	064	069	075	080	086	
96	091	097	102	108	113	119	124	129	135	140	
97	146	151	157	162	168	173	179	184	189	195	
98	200	206	211	217	222	227	233	238	244	249	
99	255	260	266	271	276	282	287	293	298	304	
800	309	314	320	325	331	336	342	347	352	358	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	6	5
1	0.6	0.5
2	1.2	1.0
3	1.8	1.5
4	2.4	2.0
5	3.0	2.5
6	3.6	3.0
7	4.2	3.5
8	4.8	4.0
9	5.4	4.5

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
800	90 309	314	320	325	331	336	342	347	352	358	
01	363	369	374	380	385	390	396	401	407	412	
02	417	423	428	434	439	445	450	455	461	466	
03	472	477	482	488	493	499	504	509	515	520	
04	526	531	536	542	547	553	558	563	569	574	
05	580	585	590	596	601	607	612	617	623	628	
06	634	639	644	650	655	660	666	671	677	682	
07	687	693	698	703	709	714	720	725	730	736	
08	741	747	752	757	763	768	773	779	784	789	
09	795	800	806	811	816	822	827	832	838	843	
810	849	854	859	865	870	875	881	886	891	897	
11	902	907	913	918	924	929	934	940	945	950	
12	956	961	966	972	977	982	988	993	998	*004	
13	91009	014	020	025	030	036	041	046	052	057	
14	062	068	073	078	084	089	094	100	105	110	
15	116	121	126	132	137	142	148	153	158	164	
16	169	174	180	185	190	196	201	206	212	217	
17	222	228	233	238	243	249	254	259	265	270	
18	275	281	286	291	297	302	307	312	318	323	
19	328	334	339	344	350	355	360	365	371	376	
820	381	387	392	397	403	408	413	418	424	429	
21	434	440	445	450	455	461	466	471	477	482	
22	487	492	498	503	508	514	519	524	529	535	
23	540	545	551	556	561	566	572	577	582	587	
24	593	598	603	609	614	619	624	630	635	640	
25	645	651	656	661	666	672	677	682	687	693	
26	698	703	709	714	719	724	730	735	740	745	
27	751	756	761	766	772	777	782	787	793	798	
28	803	808	814	819	824	829	834	840	845	850	
29	855	861	866	871	876	882	887	892	897	903	
830	908	913	918	924	929	934	939	944	950	955	
31	960	965	971	976	981	986	991	997	*002	*007	
32	92 012	018	023	028	033	038	044	049	054	059	
33	065	070	075	080	085	091	096	101	106	111	
34	117	122	127	132	137	143	148	153	158	163	
35	169	174	179	184	189	195	200	205	210	215	
36	221	226	231	236	241	247	252	257	262	267	
37	273	278	283	288	293	298	304	309	314	319	
38	324	330	335	340	345	350	355	361	366	371	
39	376	381	387	392	397	402	407	412	418	423	
840	428	433	438	443	449	454	459	464	469	474	
41	480	485	490	495	500	505	511	516	521	526	
42	531	536	542	547	552	557	562	567	572	578	
43	583	588	593	598	603	609	614	619	624	629	
44	634	639	645	650	655	660	665	670	675	681	
45	686	691	696	701	706	711	716	722	727	732	
46	737	742	747	752	758	763	768	773	778	783	
47	788	793	799	804	809	814	819	824	829	834	
48	840	845	850	855	860	865	870	875	881	886	
49	891	896	901	906	911	916	921	927	932	937	
850	942	947	952	957	962	967	973	978	983	988	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
850	92 942	947	952	957	962	967	973	978	983	988	
51	993	998	*003	*008	*013	*018	*024	*029	*034	*039	
52	93 044	049	054	059	064	069	075	080	085	090	
53	095	100	105	110	115	120	125	131	136	141	
54	146	151	156	161	166	171	176	181	186	192	
55	197	202	207	212	217	222	227	232	237	242	
56	247	252	258	263	268	273	278	283	288	293	
57	298	303	308	313	318	323	328	334	339	344	
58	349	354	359	364	369	374	379	384	389	394	
59	399	404	409	414	420	425	430	435	440	445	
860	450	455	460	465	470	475	480	485	490	495	
61	500	505	510	515	520	526	531	536	541	546	
62	551	556	561	566	571	576	581	586	591	596	
63	601	606	611	616	621	626	631	636	641	646	
64	651	656	661	666	671	676	682	687	692	697	
65	702	707	712	717	722	727	732	737	742	747	
66	752	757	762	767	772	777	782	787	792	797	
67	802	807	812	817	822	827	832	837	842	847	
68	852	857	862	867	872	877	882	887	892	897	
69	902	907	912	917	922	927	932	937	942	947	
870	952	957	962	967	972	977	982	987	992	997	
71	94 002	007	012	017	022	027	032	037	042	047	
72	052	057	062	067	072	077	082	086	091	096	
73	101	106	111	116	121	126	131	136	141	146	
74	151	156	161	166	171	176	181	186	191	196	
75	201	206	211	216	221	226	231	236	240	245	
76	250	255	260	265	270	275	280	285	290	295	
77	300	305	310	315	320	325	330	335	340	345	
78	349	354	359	364	369	374	379	384	389	394	
79	399	404	409	414	419	424	429	433	438	443	
880	448	453	458	463	468	473	478	483	488	493	
81	498	503	507	512	517	522	527	532	537	542	
82	547	552	557	562	567	571	576	581	586	591	
83	596	601	606	611	616	621	626	630	635	640	
84	645	650	655	660	665	670	675	680	685	689	
85	694	699	704	709	714	719	724	729	734	738	
86	743	748	753	758	763	768	773	778	783	787	
87	792	797	802	807	812	817	822	827	832	836	
88	841	846	851	856	861	866	871	876	880	885	
89	890	895	900	905	910	915	919	924	929	934	
890	939	944	949	954	959	963	968	973	978	983	
91	988	993	998	*002	*007	*012	*017	*022	*027	*032	
92	95 036	041	046	051	056	061	066	071	075	080	
93	085	090	095	100	105	109	114	119	124	129	
94	134	139	143	148	153	158	163	168	173	177	
95	182	187	192	197	202	207	211	216	221	226	
96	231	236	240	245	250	255	260	265	270	274	
97	279	284	289	294	299	303	308	313	318	323	
98	323	327	332	337	342	347	352	357	361	366	
99	376	381	386	390	395	400	405	410	415	419	
900	424	429	434	439	444	448	453	458	463	468	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	6	5	4
1	0.6	0.5	0.4
2	1.2	1.0	0.8
3	1.8	1.5	1.2
4	2.4	2.0	1.6
5	3.0	2.5	2.0
6	3.6	3.0	2.4
7	4.2	3.5	2.8
8	4.8	4.0	3.2
9	5.4	4.5	3.6

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		
900	95 424	429	434	439	444	448	453	458	463	468			
01	472	477	482	487	492	497	501	506	511	516			
02	521	525	530	535	540	545	550	554	559	564			
03	569	574	578	583	588	593	598	602	607	612			
04	617	622	626	631	636	641	646	650	655	660			
05	665	670	674	679	684	689	694	698	703	708			
06	713	718	722	727	732	737	742	746	751	756			
07	761	766	770	775	780	785	789	794	799	804			
08	809	813	818	823	828	832	837	842	847	852			
09	856	861	866	871	875	880	885	890	895	899			
910	904	909	914	918	923	928	933	938	942	947			
11	952	957	961	966	971	976	980	985	990	995			
12	999	*004	*009	*014	*019	*023	*028	*033	*038	*042			
13	96 047	052	057	061	066	071	076	080	085	090			
14	095	099	104	109	114	118	123	128	133	137			
15	142	147	152	156	161	166	171	175	180	185			
16	190	194	199	204	209	213	218	223	227	232			
17	237	242	246	251	256	261	265	270	275	280			
18	284	289	294	298	303	308	313	317	322	327			
19	332	336	341	346	350	355	360	365	369	374			
920	379	384	388	393	398	402	407	412	417	421			
21	426	431	435	440	445	450	454	459	464	468			
22	473	478	483	487	492	497	501	506	511	515			
23	520	525	530	534	539	544	548	553	558	562			
24	567	572	577	581	586	591	595	600	605	609			
25	614	619	624	628	633	638	642	647	652	656			
26	661	666	670	675	680	685	689	694	699	703			
27	708	713	717	722	727	731	736	741	745	750			
28	755	759	764	769	774	778	783	788	792	797			
29	802	806	811	816	820	825	830	834	839	844			
930	848	853	858	862	867	872	876	881	886	890			
31	895	900	904	909	914	918	923	928	932	937			
32	942	946	951	956	960	965	970	974	979	984			
33	988	993	997	*002	*007	*011	*016	*021	*025	*030			
34	97 035	039	044	049	053	058	063	067	072	077			
35	081	086	090	095	100	104	109	114	118	123			
36	128	132	137	142	146	151	155	160	165	169			
37	174	179	183	188	192	197	202	206	211	216			
38	220	225	230	234	239	243	248	253	257	262			
39	267	271	276	280	285	290	294	299	304	308			
940	313	317	322	327	331	336	340	345	350	354			
41	359	364	368	373	377	382	387	391	396	400			
42	405	410	414	419	424	428	433	437	442	447			
43	451	456	460	465	470	474	479	483	488	493			
44	497	502	506	511	516	520	525	529	534	539			
45	543	548	552	557	562	566	571	575	580	585			
46	589	594	598	603	607	612	617	621	626	630			
47	635	640	644	649	653	658	663	667	672	676			
48	681	685	690	695	699	704	708	713	717	722			
49	727	731	736	740	745	749	754	759	763	768			
950	772	777	782	786	791	795	800	804	809	813			
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.		

	5	4
1	0.5	0.4
2	1.0	0.8
3	1.5	1.2
4	2.0	1.6
5	2.5	2.0
6	3.0	2.4
7	3.5	2.8
8	4.0	3.2
9	4.5	3.6

N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.
950	97 772	777	782	786	791	795	800	804	809	813	
51	818	823	827	832	836	841	845	850	855	859	
52	864	868	873	877	882	886	891	896	900	905	
53	909	914	918	923	928	932	937	941	946	950	
54	955	959	964	968	973	978	982	987	991	996	
55	98 000	005	009	014	019	023	028	032	037	041	
56	046	050	055	059	064	068	073	078	082	087	
57	091	096	100	105	109	114	118	123	127	132	
58	137	141	146	150	155	159	164	168	173	177	
59	182	186	191	195	200	204	209	214	218	223	
960	227	232	236	241	245	250	254	259	263	268	
61	272	277	281	286	290	295	299	304	308	313	
62	318	322	327	331	336	340	345	349	354	358	
63	363	367	372	376	381	385	390	394	399	403	
64	408	412	417	421	426	430	435	439	444	448	
65	453	457	462	466	471	475	480	484	489	493	
66	498	502	507	511	516	520	525	529	534	538	
67	543	547	552	556	561	565	570	574	579	583	
68	588	592	597	601	605	610	614	619	623	628	
69	632	637	641	646	650	655	659	664	668	673	
970	677	682	686	691	695	700	704	709	713	717	
71	722	726	731	735	740	744	749	753	758	762	
72	767	771	776	780	784	789	793	798	802	807	
73	811	816	820	825	829	834	838	843	847	851	
74	856	860	865	869	874	878	883	887	892	896	
75	900	905	909	914	918	923	927	932	936	941	
76	945	949	954	958	963	967	972	976	981	985	
77	989	994	998	*003	*007	*012	*016	*021	*025	*029	
78	99 034	038	043	047	052	056	061	065	069	074	
79	078	083	087	092	096	100	105	109	114	118	
980	123	127	131	136	140	145	149	154	158	162	
81	167	171	176	180	185	189	193	198	202	207	
82	211	216	220	224	229	233	238	242	247	251	
83	255	260	264	269	273	277	282	286	291	295	
84	300	304	308	313	317	322	326	330	335	339	
85	344	348	352	357	361	366	370	374	379	383	
86	388	392	396	401	405	410	414	419	423	427	
87	432	436	441	445	449	454	458	463	467	471	
88	476	480	484	489	493	498	502	506	511	515	
89	520	524	528	533	537	542	546	550	555	559	
990	564	568	572	577	581	585	590	594	599	603	
91	607	612	616	621	625	629	634	638	642	647	
92	651	656	660	664	669	673	677	682	686	691	
93	695	699	704	708	712	717	721	726	730	734	
94	739	743	747	752	756	760	765	769	774	778	
95	782	787	791	795	800	804	808	813	817	822	
96	826	830	835	839	843	848	852	856	861	865	
97	870	874	878	883	887	891	896	900	904	909	
98	913	917	922	926	930	935	939	944	948	952	
99	957	961	965	970	974	978	983	987	991	996	
1000	00 000	004	009	013	017	022	026	030	035	039	
N.	0	1	2	3	4	5	6	7	8	9	Prop. Pts.

	5	4
1	0.5	0.4
2	1.0	0.8
3	1.5	1.2
4	2.0	1.6
5	2.5	2.0
6	3.0	2.4
7	3.5	2.8
8	4.0	3.2
9	4.5	3.6

CONDENSED LOGARITHMS TO FIFTEEN DECIMAL PLACES.

[The first digits of n are given in the first row at the top; the last digit of n in the left-hand column. The first column of logarithms are those of 1, 2, 3, . . . , 9. The remaining columns give $\log(1+x)$, where $x = (.1)^k$ times 1, 2, . . . , 9.]

Last Digit of n	First Digit of $n \rightarrow$	1.	1.0	1.00
	Log n	First Digits of log $n \rightarrow$	.0	.00
1	00000 00000 00000	04139 26851 58225	0432 13737 82643	043 40774 79319
2	30102 99956 63981	07918 12460 47625	0860 01717 61918	086 77215 31227
3	47712 12547 19662	11394 33523 06837	1283 72247 05172	130 09330 20418
4	60205 99913 27962	14612 80356 78238	1703 33392 98780	173 37128 09001
5	69897 00043 36019	17609 12590 55681	2118 92990 69938	216 60617 56508
6	77815 12503 83644	20411 99826 55925	2530 58652 64770	259 79807 19909
7	84509 80400 14257	23044 89213 78274	2938 37776 85210	302 94705 53618
8	90308 99869 91944	25527 25051 03306	3342 37554 86950	346 05321 09506
9	95424 25094 39325	27875 36009 52829	3742 64979 40624	389 11662 36911

(continuation)

	1.000	1.0000	1.00000	1.000000	1.0000000	1.00000000
	.000	.0000	.00000	.000000	.0000000	.00000000
1	04 34272 76863	0 43429 23104	04342 94265	0434 29446	043 42945	04 34294
2	08 68502 11649	0 86858 02780	08685 88095	0868 58888	086 85890	08 68589
3	13 02688 05227	1 30286 39028	13028 81491	1302 88325	130 28834	13 02883
4	17 36830 58465	1 73714 31850	17371 74453	1737 17758	173 71779	17 37178
5	21 70929 72230	2 17141 81245	21714 66981	2171 47187	217 14724	21 71472
6	26 04985 47390	2 60568 87215	26057 59074	2605 76611	260 57668	26 05767
7	30 38997 84812	3 03995 49761	30400 50733	3040 06031	304 00613	30 40061
8	34 72966 85364	3 47421 68884	34743 41958	3474 35447	347 43557	34 74356
9	39 06892 49910	3 90847 44584	39086 32748	3908 64858	390 86502	39 08650

[For $x < .00000001$, $\log(1+x) = x \cdot M$, to within 3 in the 17th place, where $M = .43429448 \dots$. Hence the last column gives multiples of M except for the decimal place. All the columns that would follow have the same significant digits displaced each time one place.]

CONDENSED ANTILOGARITHMS TO TEN DECIMAL PLACES.

[The first digits of n are given in the first row at the top; $n = (0.1)^k x$; $x = 1, 2, 3, \dots, 9$ are given in the left-hand column. The first digits in 10^n are given in the second row at the top.]

x	$n = .1x$	.01 x	.001 x	.0001 x	(.1) ⁵ x	(.1) ⁶ x	(.1) ⁷ x
	10 ⁿ	1.	1.0	1.00	1.000	1.0000	1.00000
1	1.25892 54118	02329 29923	0230 52381	023 02850	02 30261	0 23026	02303
2	1.58489 31925	04712 85481	0461 57903	046 06231	04 60528	0 46052	04605
3	1.99526 23150	07151 93052	0693 16689	069 10142	06 90799	0 69078	06908
4	2.51188 64315	09647 81961	0925 28861	092 14583	09 21076	0 92104	09210
5	3.16227 76602	12201 84543	1157 94543	115 19555	11 51359	1 15130	11513
6	3.98107 17055	14815 36215	1391 13857	138 25058	13 81646	1 38156	13816
7	5.01187 23363	17489 75549	1624 86929	161 31092	16 11939	1 61182	16118
8	6.30957 34448	20226 44346	1859 13881	184 37657	18 42238	1 84209	18421
9	7.94328 23472	23026 87708	2093 94837	207 41753	20 72541	2 07235	20723

[For $n < .000001$, $10^n = 1 + n \cdot (1/M)$ to within 3 in the 12th decimal place, where $(1/M) = 2.302585 \dots$. Hence the last column gives multiples of $(1/M)$ except for the decimal place. All the columns that would follow contain the same significant digits displaced one place for each new column.]

TABLE II

ACTUAL VALUES

OF THE

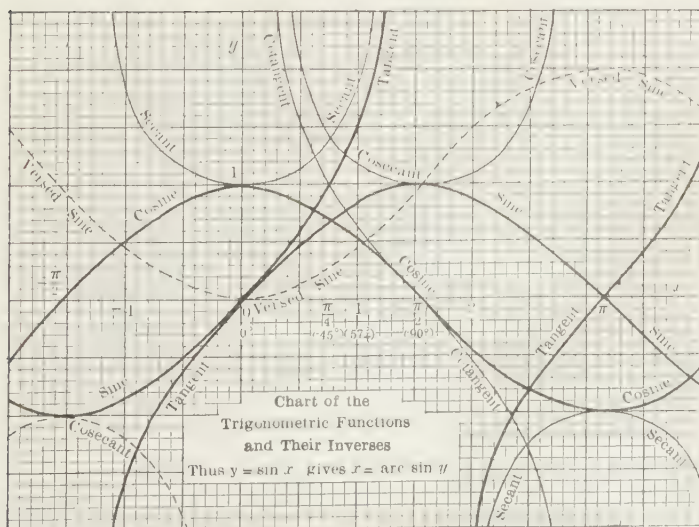
TRIGONOMETRIC FUNCTIONS

FROM

0° TO 90° AT INTERVALS OF ONE MINUTE

TO

FIVE DECIMAL PLACES



'	Sin	Tan	Ctn	Cos	'
0	.00000	.00000	—	1.0000	60
1	029	029	3437.7	000	59
2	058	058	1718.9	000	58
3	087	087	1145.9	000	57
4	116	116	859.44	000	56
5	.00145	.00145	687.55	1.0000	55
6	175	175	572.96	000	54
7	204	204	491.11	000	53
8	233	233	429.72	000	52
9	262	262	381.97	000	51
10	.00291	.00291	343.77	1.0000	50
11	320	320	312.52	.99999	49
12	349	349	286.48	999	48
13	378	378	264.44	999	47
14	407	407	245.55	999	46
15	.00436	.00436	229.18	.99999	45
16	465	465	214.86	999	44
17	495	495	202.22	999	43
18	524	524	190.98	999	42
19	553	553	180.93	998	41
20	.00582	.00582	171.89	.99998	40
21	611	611	163.70	998	39
22	640	640	156.26	998	38
23	669	669	149.47	998	37
24	698	698	143.24	998	36
25	.00727	.00727	137.51	.99997	35
26	756	756	132.22	997	34
27	785	785	127.32	997	33
28	814	815	122.77	997	32
29	844	844	118.54	996	31
30	.00873	.00873	114.59	.99996	30
31	902	902	110.89	996	29
32	931	931	107.43	996	28
33	960	960	104.17	995	27
34	.00989	.00989	101.11	995	26
35	.01018	.01018	98.218	.99995	25
36	047	047	95.489	995	24
37	076	076	92.908	994	23
38	105	105	90.463	994	22
39	134	135	88.144	994	21
40	.01161	.01161	85.940	.99993	20
41	193	193	83.844	993	19
42	222	222	81.847	993	18
43	251	251	79.943	992	17
44	280	280	78.126	992	16
45	.01309	.01309	76.239	.99991	15
46	338	338	74.729	991	14
47	367	367	73.139	991	13
48	396	396	71.615	990	12
49	425	425	70.153	990	11
50	.01454	.01455	68.750	.99989	10
51	483	484	67.402	989	9
52	513	513	66.105	989	8
53	542	542	64.858	988	7
54	571	571	63.657	988	6
55	.01600	.01600	62.499	.99987	5
56	629	629	61.383	987	4
57	658	658	60.306	986	3
58	687	687	59.266	986	2
59	716	716	58.261	985	1
60	.01745	.01746	57.290	.99985	0
	Cos	Ctn	Tan	Sin	'

89°

'	Sin	Tan	Ctn	Cos	'
0	.01745	.01746	57.290	.99985	60
1	774	775	56.351	984	59
2	803	804	55.442	984	58
3	832	833	54.561	983	57
4	862	862	53.709	983	56
5	.01891	.01891	52.882	.99982	55
6	920	920	52.081	982	54
7	949	949	51.303	981	53
8	.01978	.01978	50.549	980	52
9	.02007	.02007	49.816	980	51
10	.02036	.02036	49.104	.99979	50
11	065	066	48.412	979	49
12	094	095	47.740	978	48
13	123	124	47.085	977	47
14	152	153	46.449	977	46
15	.02181	.02182	45.829	.99976	45
16	211	211	45.226	976	44
17	240	240	44.639	975	43
18	269	269	44.066	974	42
19	298	298	43.508	974	41
20	.02327	.02328	42.964	.99973	40
21	356	357	42.433	972	39
22	385	386	41.916	972	38
23	414	415	41.411	971	37
24	443	444	40.917	970	36
25	.02472	.02473	40.436	.99969	35
26	501	502	39.965	969	34
27	530	531	39.506	968	33
28	560	560	39.057	967	32
29	589	589	38.618	966	31
30	.02618	.02619	38.188	.99966	30
31	647	648	37.769	965	29
32	676	677	37.358	964	28
33	705	706	36.956	963	27
34	734	735	36.563	963	26
35	.02763	.02764	36.178	.99962	25
36	792	793	35.801	961	24
37	821	822	35.431	960	23
38	850	851	35.070	959	22
39	879	881	34.715	959	21
40	.02908	.02910	34.368	.99958	20
41	938	939	34.027	957	19
42	967	968	33.694	956	18
43	.02996	.02997	33.366	955	17
44	.03025	.03026	33.045	954	16
45	.03054	.03055	32.730	.99953	15
46	083	084	32.421	952	14
47	112	114	32.118	952	13
48	141	143	31.821	951	12
49	170	172	31.528	950	11
50	.03199	.03201	31.242	.99949	10
51	228	230	30.960	948	9
52	257	259	30.683	947	8
53	286	288	30.412	946	7
54	316	317	30.145	945	6
55	.03345	.03346	29.882	.99944	5
56	374	376	29.624	943	4
57	403	405	29.371	942	3
58	432	434	29.122	941	2
59	461	463	28.877	940	1
60	.03490	.03492	28.636	.99939	0
	Cos	Ctn	Tan	Sin	'

88°

'	Sin	Tan	Ctn	Cos	'
0	.03490	.03492	28.636	.99939	60
1	519	521	.399	938	59
2	548	550	28.166	937	58
3	577	579	27.937	936	57
4	606	609	.712	935	56
5	.03635	.03638	27.490	.99934	55
6	664	667	.271	933	54
7	693	696	27.057	932	53
8	723	725	26.845	931	52
9	752	754	.637	930	51
10	.03781	.03783	26.432	.99929	50
11	810	812	.230	927	49
12	839	842	26.031	926	48
13	868	871	25.835	925	47
14	897	900	.642	924	46
15	.03926	.03929	25.452	.99923	45
16	955	958	.264	922	44
17	.03984	.03987	25.080	921	43
18	.04013	.04016	24.898	919	42
19	942	946	.719	918	41
20	.04071	.04075	24.542	.99917	40
21	100	104	.368	916	39
22	129	133	.196	915	38
23	159	162	24.026	913	37
24	188	191	23.859	912	36
25	.04217	.04220	23.695	.99911	35
26	246	250	.532	910	34
27	275	279	.372	909	33
28	304	308	.214	907	32
29	333	337	23.058	906	31
30	.04362	.04366	22.904	.99905	30
31	391	395	.752	904	29
32	420	424	.602	902	28
33	449	454	.454	901	27
34	478	483	.308	900	26
35	.04507	.04512	22.164	.99898	25
36	536	541	22.022	897	24
37	565	570	21.881	896	23
38	594	599	.743	894	22
39	623	628	.606	893	21
40	.04653	.04658	21.470	.99892	20
41	682	687	.337	890	19
42	711	716	.205	889	18
43	740	745	21.075	888	17
44	769	774	20.946	886	16
45	.04798	.04803	20.819	.99885	15
46	827	833	.693	885	14
47	856	862	.569	882	13
48	885	891	.446	881	12
49	914	920	.325	879	11
50	.04943	.04949	20.206	.99878	10
51	.04972	.04978	20.087	876	9
52	.05001	.05007	19.970	875	8
53	930	937	.855	873	7
54	959	966	.740	872	6
55	.05088	.05095	19.627	.99870	5
56	117	124	.516	869	4
57	146	153	.405	867	3
58	175	182	.296	866	2
59	205	212	.188	864	1
60	.05234	.05241	19.081	.99863	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.05234	.05241	19.081	.99863	60
1	263	270	18.976	861	59
2	292	299	.871	860	58
3	321	328	.768	858	57
4	350	357	.666	857	56
5	.05379	.05387	18.564	.99855	55
6	408	416	.464	854	54
7	437	445	.366	852	53
8	466	474	.268	851	52
9	495	503	.171	849	51
10	.05524	.05533	18.075	.99847	50
11	553	562	17.980	846	49
12	582	591	.886	844	48
13	611	620	.793	842	47
14	640	649	.702	841	46
15	.05669	.05678	17.611	.99839	45
16	698	708	.521	838	44
17	727	737	.431	836	43
18	756	766	.343	834	42
19	785	795	.256	833	41
20	.05814	.05824	17.169	.99831	40
21	844	854	17.084	829	39
22	873	883	16.999	827	38
23	902	912	.915	826	37
24	931	941	.832	824	36
25	.05960	.05970	16.750	.99822	35
26	.05989	.05999	.668	821	34
27	.06018	.06029	.587	819	33
28	947	958	.507	817	32
29	976	987	.428	815	31
30	.06105	.06116	16.350	.99813	30
31	134	145	.272	812	29
32	163	175	.195	810	28
33	192	204	.119	808	27
34	221	233	16.043	806	26
35	.06250	.06262	15.969	.99804	25
36	279	291	.895	803	24
37	308	321	.821	801	23
38	337	350	.748	799	22
39	366	379	.676	797	21
40	.06395	.06408	15.605	.99795	20
41	424	438	.534	793	19
42	453	467	.464	792	18
43	482	496	.394	790	17
44	511	525	.325	788	16
45	.06540	.06554	15.257	.99786	15
46	569	584	.189	784	14
47	598	613	.122	782	13
48	627	642	15.056	780	12
49	656	671	14.990	778	11
50	.06685	.06700	14.924	.99776	10
51	714	730	.860	774	9
52	743	759	.795	772	8
53	773	788	.732	770	7
54	802	817	.669	768	6
55	.06831	.06847	14.606	.99766	5
56	860	876	.544	764	4
57	889	905	.482	762	3
58	918	934	.421	760	2
59	947	963	.361	758	1
60	.06976	.06993	14.301	.99756	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.06976	.06993	14.301	.99756	60
1	.07005	.07022	.241	754	59
2	034	051	.182	752	58
3	063	080	.124	750	57
4	092	110	.065	748	56
5	.07121	.07139	14.008	.99746	55
6	150	168	13.951	744	54
7	179	197	.894	742	53
8	208	227	.838	740	52
9	237	256	.782	738	51
10	.07266	.07285	13.727	.99736	50
11	295	314	.672	734	49
12	324	344	.617	731	48
13	353	373	.563	729	47
14	382	402	.510	727	46
15	.07411	.07431	13.457	.99725	45
16	440	461	.404	723	44
17	469	490	.352	721	43
18	498	519	.300	719	42
19	527	548	.248	716	41
20	.07556	.07578	13.197	.99714	40
21	585	607	.146	712	39
22	614	636	.096	710	38
23	643	665	13.046	708	37
24	672	695	12.906	705	36
25	.07701	.07724	12.947	.99703	35
26	730	753	.898	701	34
27	759	782	.850	699	33
28	788	812	.801	696	32
29	817	841	.754	694	31
30	.07846	.07870	12.706	.99692	30
31	875	899	.659	689	29
32	904	929	.612	687	28
33	933	958	.566	685	27
34	962	.07987	.520	683	26
35	.07991	.08017	12.474	.99680	25
36	.08020	046	.429	678	24
37	049	075	.384	676	23
38	078	104	.339	673	22
39	107	134	.295	671	21
40	.08136	.08163	12.251	.99668	20
41	165	192	.207	666	19
42	194	221	.163	664	18
43	223	251	.120	661	17
44	252	280	.077	659	16
45	.08281	.08309	12.035	.99657	15
46	310	339	11.992	654	14
47	339	368	.950	652	13
48	368	397	.909	649	12
49	397	427	.867	647	11
50	.08426	.08456	11.826	.99644	10
51	455	485	.785	642	9
52	484	514	.745	639	8
53	513	544	.705	637	7
54	542	573	.664	635	6
55	.08571	.08602	11.625	.99632	5
56	600	632	.585	630	4
57	629	661	.546	627	3
58	658	690	.507	625	2
59	687	720	.468	622	1
60	.08716	.08749	11.430	.99619	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.08716	.08749	11.430	.99619	60
1	745	778	.392	617	59
2	774	807	.354	614	58
3	803	837	.316	612	57
4	831	866	.279	609	56
5	.08860	.08895	11.242	.99607	55
6	889	925	.205	604	54
7	918	954	.168	602	53
8	947	.08983	.132	599	52
9	.08976	.09013	.095	596	51
10	.09005	.09042	11.059	.99594	50
11	034	071	11.024	591	49
12	063	101	10.988	588	48
13	092	130	.953	586	47
14	121	159	.918	583	46
15	.09150	.09189	10.883	.99580	45
16	179	218	.848	578	44
17	208	247	.814	575	43
18	237	277	.780	572	42
19	266	306	.746	570	41
20	.09295	.09335	10.712	.99567	40
21	324	365	.678	564	39
22	353	394	.645	562	38
23	382	423	.612	559	37
24	411	453	.579	556	36
25	.09440	.09482	10.546	.99553	35
26	469	511	.514	551	34
27	498	541	.481	548	33
28	527	570	.449	545	32
29	556	600	.417	542	31
30	.09585	.09629	10.385	.99540	30
31	614	658	.354	537	29
32	642	688	.322	534	28
33	671	717	.291	531	27
34	700	746	.260	528	26
35	.09729	.09776	10.229	.99526	25
36	758	805	.199	523	24
37	787	834	.168	520	23
38	816	864	.138	517	22
39	845	893	.108	514	21
40	.09874	.09923	10.078	.99511	20
41	903	952	.048	508	19
42	932	.09981	10.019	506	18
43	961	.10011	9.9893	503	17
44	.09990	040	.9601	500	16
45	.10019	.10069	9.9310	.99497	15
46	048	099	.9021	494	14
47	077	128	.8734	491	13
48	106	158	.8448	488	12
49	135	187	.8164	485	11
50	.10164	.10216	9.7882	.99482	10
51	192	246	.7601	479	9
52	221	275	.7322	476	8
53	250	305	.7044	473	7
54	279	334	.6768	470	6
55	.10308	.10363	9.6493	.99467	5
56	337	393	.6220	464	4
57	366	422	.5949	461	3
58	395	452	.5679	458	2
59	424	481	.5411	455	1
60	.10453	.10510	9.5144	.99452	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.10453	.10510	9.5144	.99452	60
1	482	540	.4878	449	59
2	511	569	.4614	446	58
3	540	599	.4352	443	57
4	569	628	.4090	440	56
5	.10597	.10657	9.3831	.99437	55
6	626	687	.3572	434	54
7	655	716	.3315	431	53
8	684	746	.3060	428	52
9	713	775	.2806	424	51
10	.10742	.10805	9.2553	.99421	50
11	771	834	.2302	418	49
12	800	863	.2052	415	48
13	829	893	.1803	412	47
14	858	922	.1555	409	46
15	.10887	.10952	9.1309	.99406	45
16	916	.10981	.1065	402	44
17	945	.11011	.0821	399	43
18	.10973	040	.0579	396	42
19	.11002	070	.0338	393	41
20	.11031	.11099	9.0098	.99390	40
21	060	128	8.9860	386	39
22	089	158	.9623	383	38
23	118	187	.9387	380	37
24	147	217	.9152	377	36
25	.11176	.11246	8.8919	.99374	35
26	205	276	.8686	370	34
27	234	305	.8455	367	33
28	263	335	.8225	364	32
29	291	364	.7996	360	31
30	.11320	.11394	8.7769	.99357	30
31	349	423	.7542	354	29
32	378	452	.7317	351	28
33	407	482	.7093	347	27
34	436	511	.6870	344	26
35	.11465	.11541	8.6648	.99341	25
36	494	570	.6427	337	24
37	523	600	.6208	334	23
38	552	629	.5989	331	22
39	580	659	.5772	327	21
40	.11609	.11688	8.5555	.99324	20
41	638	718	.5340	320	19
42	667	747	.5126	317	18
43	696	777	.4913	314	17
44	725	806	.4701	310	16
45	.11754	.11836	8.4490	.99307	15
46	783	865	.4280	303	14
47	812	895	.4071	300	13
48	840	924	.3863	297	12
49	869	954	.3656	293	11
50	.11898	.11983	8.3450	.99290	10
51	927	.12013	.3245	286	9
52	956	042	.3041	283	8
53	.11985	072	.2838	279	7
54	.12014	101	.2636	276	6
55	.12043	.12131	8.2434	.99272	5
56	071	160	.2234	269	4
57	100	190	.2035	265	3
58	129	219	.1837	262	2
59	158	249	.1640	258	1
60	.12187	.12278	8.1443	.99255	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.12187	.12278	8.1443	.99255	60
1	216	308	.1248	251	59
2	245	338	.1054	248	58
3	274	367	.0860	244	57
4	302	397	.0667	240	56
5	.12331	.12426	8.0476	.99237	55
6	360	456	.0285	233	54
7	389	485	8.0095	230	53
8	418	515	7.9905	226	52
9	447	544	.9718	222	51
10	.12476	.12574	7.9530	.99219	50
11	504	603	.9344	215	49
12	533	633	.9158	211	48
13	562	662	.8973	208	47
14	591	692	.8789	204	46
15	.12620	.12722	7.8606	.99200	45
16	649	751	.8424	197	44
17	678	781	.8243	193	43
18	706	810	.8062	189	42
19	735	840	.7882	186	41
20	.12764	.12869	7.7704	.99182	40
21	793	899	.7525	178	39
22	822	929	.7348	175	38
23	851	958	.7171	171	37
24	880	.12988	.6996	167	36
25	.12908	.13017	7.6821	.99163	35
26	937	047	.6647	160	34
27	966	076	.6473	156	33
28	.12995	106	.6301	152	32
29	.13024	136	.6129	148	31
30	.13053	.13165	7.5958	.99144	30
31	081	195	.5787	141	29
32	110	224	.5618	137	28
33	139	254	.5449	133	27
34	168	284	.5281	129	26
35	.13197	.13313	7.5113	.99125	25
36	226	343	.4947	122	24
37	254	372	.4781	118	23
38	283	402	.4615	114	22
39	312	432	.4451	110	21
40	.13341	.13461	7.4287	.99106	20
41	370	491	.4124	102	19
42	399	521	.3962	098	18
43	427	550	.3800	094	17
44	456	580	.3639	091	16
45	.13485	.13609	7.3479	.99087	15
46	514	639	.3319	083	14
47	543	669	.3160	079	13
48	572	698	.3002	075	12
49	600	728	.2844	071	11
50	.13629	.13758	7.2687	.99067	10
51	658	787	.2531	063	9
52	687	817	.2375	059	8
53	716	846	.2220	055	7
54	744	876	.2066	051	6
55	.13773	.13906	7.1912	.99047	5
56	802	935	.1759	043	4
57	831	965	.1607	039	3
58	860	.13995	.1455	035	2
59	889	.14024	.1304	031	1
60	.13917	.14054	7.1154	.99027	0
	Cos	Ctn	Tan	Sin	'

$\angle$	Sin	Tan	Ctn	Cos	
0	.13917	.14054	7.1154	.99027	60
1	.146	.084	.1004	.023	59
2	.13975	.113	.0855	.019	58
3	.14004	.143	.0706	.015	57
4	.033	.173	.0558	.011	56
5	.14061	.14202	7.0410	.99006	55
6	.090	.232	.0264	.99002	54
7	.119	.262	7.0117	.98998	53
8	.148	.291	6.9972	.994	52
9	.177	.321	.9827	.990	51
10	.14205	.14351	6.9682	.98986	50
11	.234	.381	.9538	.982	49
12	.263	.410	.9395	.978	48
13	.292	.440	.9252	.973	47
14	.320	.470	.9110	.969	46
15	.11349	.14199	6.8969	.98965	45
16	.378	.529	.8828	.961	44
17	.407	.559	.8687	.957	43
18	.436	.588	.8548	.953	42
19	.464	.618	.8408	.948	41
20	.14493	.14648	6.8269	.98944	40
21	.522	.678	.8131	.940	39
22	.551	.707	.7994	.936	38
23	.580	.737	.7856	.931	37
24	.608	.767	.7720	.927	36
25	.14637	.14796	6.7584	.98923	35
26	.666	.826	.7448	.919	34
27	.695	.856	.7313	.914	33
28	.723	.886	.7179	.910	32
29	.752	.915	.7045	.906	31
30	.14781	.14945	6.6912	.98902	30
31	.810	.14975	.6779	.897	29
32	.838	.15005	.6646	.893	28
33	.867	.034	.6514	.889	27
34	.896	.064	.6383	.884	26
35	.14925	.15094	6.6252	.98880	25
36	.954	.124	.6122	.876	24
37	.14982	.153	.5992	.871	23
38	.15011	.183	.5863	.867	22
39	.040	.213	.5734	.863	21
40	.15069	.15243	6.5606	.98858	20
41	.097	.272	.5478	.854	19
42	.126	.302	.5350	.849	18
43	.155	.332	.5223	.845	17
44	.184	.362	.5097	.841	16
45	.15212	.15391	6.4971	.98836	15
46	.211	.421	.4846	.832	14
47	.270	.451	.4721	.827	13
48	.290	.481	.4596	.823	12
49	.327	.511	.4472	.818	11
50	.15356	.15540	6.4348	.98814	10
51	.385	.570	.4225	.809	9
52	.414	.600	.4103	.805	8
53	.442	.630	.3980	.800	7
54	.471	.660	.3859	.796	6
55	.15500	.15689	6.3737	.98791	5
56	.529	.719	.3617	.787	4
57	.557	.749	.3496	.782	3
58	.586	.779	.3376	.778	2
59	.615	.809	.3257	.773	1
60	.15643	.15838	6.3138	.98769	0
	Cos	Ctn	Tan	Sin	$\angle$

81°

$\angle$	Sin	Tan	Ctn	Cos	
0	.15643	.15838	6.3138	.98769	60
1	.672	.868	.3019	.764	59
2	.701	.898	.2901	.760	58
3	.730	.928	.2783	.755	57
4	.758	.958	.2666	.751	56
5	.15787	.15988	6.2549	.98746	55
6	.816	.16017	.2432	.741	54
7	.845	.047	.2316	.737	53
8	.873	.077	.2200	.732	52
9	.902	.107	.2085	.728	51
10	.15931	.16137	6.1970	.98723	50
11	.959	.167	.1856	.718	49
12	.15988	.196	.1742	.714	48
13	.16017	.226	.1628	.709	47
14	.046	.256	.1515	.704	46
15	.16074	.16286	6.1402	.98700	45
16	.103	.316	.1290	.695	44
17	.132	.346	.1178	.690	43
18	.160	.376	.1066	.686	42
19	.189	.405	.0955	.681	41
20	.16218	.16435	6.0844	.98676	40
21	.246	.465	.0734	.671	39
22	.275	.495	.0624	.667	38
23	.304	.525	.0514	.662	37
24	.333	.555	.0405	.657	36
25	.16361	.16585	6.0296	.98652	35
26	.390	.615	.0188	.648	34
27	.419	.645	6.0080	.643	33
28	.447	.674	5.9972	.638	32
29	.476	.704	.9865	.633	31
30	.16505	.16734	5.9758	.98629	30
31	.533	.764	.9651	.624	29
32	.562	.794	.9545	.619	28
33	.591	.824	.9439	.614	27
34	.620	.854	.9333	.609	26
35	.16648	.16884	5.9228	.98604	25
36	.677	.914	.9124	.600	24
37	.706	.944	.9019	.595	23
38	.734	.16974	.8915	.590	22
39	.763	.17004	.8811	.585	21
40	.16792	.17033	5.8708	.98580	20
41	.820	.063	.8605	.575	19
42	.849	.093	.8502	.570	18
43	.878	.123	.8400	.565	17
44	.906	.153	.8298	.561	16
45	.16935	.17183	5.8197	.98556	15
46	.964	.213	.8095	.551	14
47	.16992	.243	.7994	.546	13
48	.17021	.273	.7894	.541	12
49	.050	.303	.7794	.536	11
50	.17078	.17333	5.7694	.98531	10
51	.107	.363	.7594	.526	9
52	.136	.393	.7495	.521	8
53	.164	.423	.7396	.516	7
54	.193	.453	.7297	.511	6
55	.17222	.17483	5.7199	.98506	5
56	.250	.513	.7101	.501	4
57	.279	.543	.7004	.496	3
58	.308	.573	.6906	.491	2
59	.336	.603	.6809	.486	1
60	.17365	.17633	5.6713	.98481	0
	Cos	Ctn	Tan	Sin	$\angle$

89°

'	Sin	Tan	Ctn	Cos	'
0	.17365	.17633	5.6713	.98481	60
1	393	663	.6617	476	59
2	422	693	.6521	471	58
3	451	723	.6425	466	57
4	479	753	.6329	461	56
5	.17508	.17783	5.6234	.98455	55
6	537	813	.6140	450	54
7	565	843	.6045	445	53
8	594	873	.5951	440	52
9	623	903	.5857	435	51
10	.17651	.17933	5.5764	.98430	50
11	650	963	.5671	425	49
12	708	.17993	.5578	420	48
13	747	.18023	.5485	414	47
14	766	053	.5393	409	46
15	.17794	.18083	5.5301	.98404	45
16	823	113	.5209	399	44
17	852	143	.5118	394	43
18	880	173	.5026	389	42
19	909	203	.4936	383	41
20	.17937	.18233	5.4845	.98378	40
21	936	263	.4755	373	39
22	.17995	293	.4665	368	38
23	.18023	323	.4575	362	37
24	052	353	.4486	357	36
25	.18081	.18384	5.4397	.98352	35
26	109	414	.4398	347	34
27	138	444	.4299	341	33
28	166	474	.4191	336	32
29	195	504	.4093	331	31
30	.18224	.18534	5.3955	.98325	30
31	252	564	.3968	320	29
32	281	594	.3874	315	28
33	309	624	.3784	310	27
34	338	654	.3697	304	26
35	.18367	.18684	5.3521	.98299	25
36	395	714	.3603	294	24
37	424	745	.3519	288	23
38	452	775	.3426	283	22
39	481	805	.3337	277	21
40	.18509	.18835	5.3093	.98272	20
41	538	865	.3250	267	19
42	567	895	.3161	261	18
43	595	925	.3070	256	17
44	624	955	.2975	250	16
45	.18652	.18986	5.2672	.98245	15
46	681	.19016	.2888	240	14
47	710	046	.2805	234	13
48	738	076	.2722	229	12
49	767	106	.2639	223	11
50	.18795	.19136	5.2257	.98218	10
51	824	166	.2554	212	9
52	852	197	.2472	207	8
53	881	227	.2389	201	7
54	910	257	.2309	196	6
55	.18938	.19287	5.1848	.98190	5
56	967	317	.2226	185	4
57	.18995	347	.2146	179	3
58	.19024	378	.2066	174	2
59	052	408	.1986	168	1
60	.19081	.19438	5.1446	.98163	0
	Cos	Ctn	Tan	Sin	'

79°

'	Sin	Tan	Ctn	Cos	'
0	.19081	.19438	5.1446	.98163	60
1	109	468	.1366	157	59
2	138	498	.1286	152	58
3	167	529	.1207	146	57
4	195	559	.1128	140	56
5	.19224	.19589	5.1049	.98135	55
6	252	619	.0970	129	54
7	281	649	.0892	124	53
8	309	680	.0814	118	52
9	338	710	.0736	112	51
10	.19366	.19740	5.0658	.98107	50
11	395	770	.0581	101	49
12	423	801	.0504	096	48
13	452	831	.0427	090	47
14	481	861	.0350	084	46
15	.19509	.19891	5.0273	.98079	45
16	538	921	.0197	073	44
17	566	952	.0121	067	43
18	595	.19982	5.0045	061	42
19	623	.20012	4.9969	056	41
20	.19652	.20042	4.9894	.98050	40
21	680	073	.9819	044	39
22	709	103	.9744	039	38
23	737	133	.9669	033	37
24	766	164	.9594	027	36
25	.19794	.20194	4.9520	.98021	35
26	823	224	.9446	016	34
27	851	254	.9372	010	33
28	880	285	.9298	.98004	32
29	908	315	.9225	.97998	31
30	.19937	.20345	4.9152	.97992	30
31	965	376	.9078	.987	29
32	.19994	406	.9006	.981	28
33	.20022	436	.8933	.975	27
34	051	466	.8860	.969	26
35	.20079	.20497	4.8788	.97963	25
36	108	527	.8716	.958	24
37	136	557	.8644	.952	23
38	165	588	.8573	.946	22
39	193	618	.8501	.940	21
40	.20222	.20648	4.8430	.97934	20
41	250	679	.8359	.928	19
42	279	709	.8288	.922	18
43	307	739	.8218	.916	17
44	336	770	.8147	.910	16
45	.20364	.20800	4.8077	.97905	15
46	393	830	.8007	.899	14
47	421	861	.7937	.893	13
48	450	891	.7867	.887	12
49	478	921	.7798	.881	11
50	.20507	.20952	4.7729	.97875	10
51	535	.20982	.7659	.869	9
52	563	.21013	.7591	.863	8
53	592	043	.7522	.857	7
54	620	073	.7453	.851	6
55	.20649	.21104	4.7385	.97845	5
56	677	134	.7317	.839	4
57	706	164	.7249	.833	3
58	734	195	.7181	.827	2
59	763	225	.7114	.821	1
60	.20791	.21256	4.7046	.97815	0
	Cos	Ctn	Tan	Sin	'

78°

'	Sin	Tan	Ctn	Cos	
0	.20791	.21256	4.7046	.97815	60
1	820	286	.6979	809	59
2	848	316	.6912	803	58
3	877	347	.6845	797	57
4	905	377	.6779	791	56
5	.20933	.21408	4.6712	.97784	55
6	962	438	.6646	778	54
7	.20990	469	.6580	772	53
8	.21019	499	.6514	766	52
9	047	529	.6448	760	51
10	.21076	.21560	4.6382	.97754	50
11	104	590	.6317	748	49
12	132	621	.6252	742	48
13	161	651	.6187	735	47
14	189	682	.6122	729	46
15	.21218	.21712	4.6057	.97723	45
16	246	743	.5993	717	44
17	275	773	.5928	711	43
18	303	804	.5864	705	42
19	331	834	.5800	698	41
20	.21360	.21864	4.5736	.97692	40
21	388	895	.5673	686	39
22	417	925	.5609	680	38
23	445	956	.5546	673	37
24	474	.21986	.5483	667	36
25	.21502	.22017	4.5420	.97661	35
26	530	047	.5357	655	34
27	559	078	.5294	648	33
28	587	108	.5232	642	32
29	616	139	.5169	636	31
30	.21644	.22169	4.5107	.97630	30
31	672	200	.5045	623	29
32	701	231	.4983	617	28
33	729	261	.4922	611	27
34	758	292	.4860	604	26
35	.21786	.22322	4.4799	.97598	25
36	814	353	.4737	592	24
37	843	383	.4676	585	23
38	871	414	.4615	579	22
39	899	444	.4555	573	21
40	.21928	.22475	4.4494	.97566	20
41	956	505	.4434	560	19
42	.21985	536	.4373	553	18
43	.22013	567	.4313	547	17
44	041	597	.4253	541	16
45	.22070	.22628	4.4194	.97534	15
46	098	658	.4134	528	14
47	126	689	.4075	521	13
48	155	719	.4015	515	12
49	183	750	.3956	508	11
50	.22212	.22781	4.3897	.97502	10
51	240	811	.3838	496	9
52	268	842	.3779	489	8
53	297	872	.3721	483	7
54	325	903	.3662	476	6
55	.22353	.22931	4.3604	.97470	5
56	382	964	.3604	463	4
57	410	.22995	.3488	457	3
58	438	.23026	.3430	450	2
59	467	056	.3372	444	1
60	.22495	.23087	4.3315	.97437	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.22495	.23087	4.3315	.97437	60
1	523	117	.3257	430	59
2	552	148	.3200	424	58
3	580	179	.3143	417	57
4	608	209	.3086	411	56
5	.22637	.23240	4.3029	.97404	55
6	665	271	.2972	398	54
7	693	301	.2916	391	53
8	722	332	.2859	384	52
9	750	363	.2803	378	51
10	.22778	.23393	4.2747	.97371	50
11	807	424	.2691	365	49
12	835	455	.2635	358	48
13	863	485	.2580	351	47
14	892	516	.2524	345	46
15	.22920	.23547	4.2468	.97338	45
16	948	578	.2413	331	44
17	.22977	608	.2358	325	43
18	.23005	639	.2303	318	42
19	033	670	.2248	311	41
20	.23062	.23700	4.2193	.97304	40
21	090	731	.2139	298	39
22	118	762	.2084	291	38
23	146	793	.2030	284	37
24	175	823	.1976	278	36
25	.23203	.23854	4.1922	.97271	35
26	231	885	.1868	264	34
27	260	916	.1814	257	33
28	288	946	.1760	251	32
29	316	.23977	.1706	244	31
30	.23345	.24008	4.1653	.97237	30
31	373	039	.1600	230	29
32	401	069	.1547	223	28
33	429	100	.1493	217	27
34	458	131	.1441	210	26
35	.23486	.24162	4.1388	.97203	25
36	514	193	.1335	196	24
37	542	223	.1282	189	23
38	571	254	.1230	182	22
39	599	285	.1178	176	21
40	.23627	.24316	4.1126	.97169	20
41	656	317	.1074	162	19
42	684	377	.1022	155	18
43	712	408	.0970	148	17
44	740	439	.0918	141	16
45	.23769	.24470	4.0867	.97134	15
46	797	501	.0815	127	14
47	825	532	.0764	120	13
48	853	562	.0713	113	12
49	882	593	.0662	106	11
50	.23910	.24624	4.0611	.97100	10
51	938	655	.0560	093	9
52	966	686	.0509	086	8
53	.23995	717	.0459	079	7
54	.24023	747	.0408	072	6
55	.24051	.24778	4.0358	.97065	5
56	079	809	.0308	058	4
57	108	840	.0257	051	3
58	136	871	.0207	044	2
59	164	902	.0158	037	1
60	.24192	.24933	4.0108	.97030	0
	Cos	Ctn	Tan	Sin	'

	Sin	Tan	Ctn	Cos	
0	.24192	.24933	4.0108	.97030	60
1	220	964	.0058	023	59
2	249	.24995	4.0009	015	58
3	277	.25026	3.9959	008	57
4	305	056	.9910	.97001	56
5	.24333	.25087	3.9861	.96994	55
6	362	118	.9812	987	54
7	390	149	.9763	980	53
8	418	180	.9714	973	52
9	446	211	.9665	966	51
10	.24174	.25242	3.9617	.96959	50
11	503	273	.9568	952	49
12	531	304	.9520	945	48
13	559	335	.9471	937	47
14	587	366	.9423	930	46
15	.24615	.25397	3.9375	.96923	45
16	644	428	.9327	916	44
17	672	459	.9279	909	43
18	700	490	.9232	902	42
19	728	521	.9184	894	41
20	.24756	.25552	3.9136	.96887	40
21	784	583	.9089	886	39
22	813	614	.9042	879	38
23	841	645	.8995	866	37
24	869	676	.8947	858	36
25	.24897	.25707	3.8900	.96851	35
26	925	738	.8854	844	34
27	954	769	.8807	837	33
28	.24982	800	.8760	829	32
29	.25010	831	.8714	822	31
30	.25038	.25862	3.8667	.96815	30
31	006	893	.8621	807	29
32	094	924	.8575	800	28
33	122	955	.8528	793	27
34	151	.25986	.8482	786	26
35	.25179	.26017	3.8436	.96778	25
36	207	048	.8391	771	24
37	235	079	.8345	764	23
38	263	110	.8299	756	22
39	291	141	.8254	749	21
40	.25320	.26172	3.8208	.96742	20
41	348	203	.8163	734	19
42	376	235	.8118	727	18
43	404	266	.8073	719	17
44	432	297	.8028	712	16
45	.25460	.26328	3.7983	.96705	15
46	488	359	.7938	697	14
47	516	390	.7893	690	13
48	545	421	.7848	682	12
49	573	452	.7804	675	11
50	.25601	.26483	3.7760	.96667	10
51	629	515	.7715	660	9
52	657	546	.7671	653	8
53	685	577	.7627	645	7
54	713	608	.7583	638	6
55	.25741	.26639	3.7539	.96630	5
56	769	670	.7495	623	4
57	798	701	.7451	615	3
58	826	733	.7408	608	2
59	854	764	.7364	600	1
60	.25882	.26795	3.7321	.96593	0
	Cos	Ctn	Tan	Sin	'

	Sin	Tan	Ctn	Cos	
0	.25882	.26795	3.7321	.96593	60
1	910	826	.7277	585	59
2	938	857	.7234	578	58
3	966	888	.7191	570	57
4	.25994	920	.7148	562	56
5	.26022	.26951	3.7105	.96555	55
6	050	.26982	.7062	547	54
7	079	.27013	.7019	540	53
8	107	044	.6976	532	52
9	135	076	.6933	524	51
10	.26163	.27107	3.6891	.96517	50
11	191	138	.6848	509	49
12	219	169	.6806	502	48
13	247	201	.6764	494	47
14	275	232	.6722	486	46
15	.26303	.27263	3.6680	.96479	45
16	331	294	.6638	471	44
17	359	326	.6596	463	43
18	387	357	.6554	456	42
19	415	388	.6512	448	41
20	.26443	.27419	3.6470	.96440	40
21	471	451	.6429	433	39
22	500	482	.6387	425	38
23	528	513	.6346	417	37
24	556	545	.6305	410	36
25	.26584	.27576	3.6264	.96402	35
26	612	607	.6222	394	34
27	640	638	.6181	386	33
28	668	670	.6140	379	32
29	696	701	.6100	371	31
30	.26724	.27732	3.6059	.96363	30
31	752	764	.6018	355	29
32	780	795	.5978	347	28
33	808	826	.5937	340	27
34	836	858	.5897	332	26
35	.26864	.27889	3.5856	.96324	25
36	892	921	.5816	316	24
37	920	952	.5776	308	23
38	948	.27983	.5736	301	22
39	.26976	.28015	.5696	293	21
40	.27004	.28046	3.5656	.96285	20
41	032	077	.5616	277	19
42	060	109	.5576	269	18
43	088	140	.5536	261	17
44	116	172	.5497	253	16
45	.27144	.28203	3.5457	.96246	15
46	172	234	.5418	238	14
47	200	266	.5379	230	13
48	228	297	.5339	222	12
49	256	329	.5300	214	11
50	.27284	.28360	3.5261	.96206	10
51	312	391	.5222	198	9
52	340	423	.5183	190	8
53	368	454	.5144	182	7
54	396	486	.5105	174	6
55	.27424	.28517	3.5067	.96166	5
56	452	549	.5028	158	4
57	480	580	.4989	150	3
58	508	612	.4951	142	2
59	536	643	.4912	134	1
60	.27564	.28675	3.4874	.96126	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.27564	.28675	3.4874	.96126	60
1	592	706	.4836	118	59
2	620	738	.4798	110	58
3	648	769	.4760	102	57
4	676	801	.4722	094	56
5	.27704	.28832	3.4684	.96085	55
6	731	864	.4646	078	54
7	759	895	.4608	070	53
8	787	927	.4570	062	52
9	815	958	.4533	054	51
10	.27843	.28990	3.4495	.96046	50
11	871	.29021	.4458	037	49
12	899	053	.4420	029	48
13	927	084	.4383	021	47
14	955	116	.4346	013	46
15	.27983	.29147	3.4308	.96005	45
16	.28011	179	.4271	.95997	44
17	039	210	.4234	989	43
18	067	242	.4197	981	42
19	095	274	.4160	972	41
20	.28123	.29305	3.4124	.95964	40
21	150	337	.4087	956	39
22	178	368	.4050	948	38
23	206	400	.4014	940	37
24	234	432	.3977	931	36
25	.28262	.29463	3.3941	.95923	35
26	290	495	.3904	915	34
27	318	526	.3868	907	33
28	346	558	.3832	898	32
29	374	590	.3796	890	31
30	.28402	.29621	3.3759	.95882	30
31	429	653	.3723	874	29
32	457	685	.3687	865	28
33	485	716	.3652	857	27
34	513	748	.3616	849	26
35	.28541	.29780	3.3580	.95841	25
36	569	811	.3544	832	24
37	597	843	.3509	824	23
38	625	875	.3473	816	22
39	652	906	.3438	807	21
40	.28680	.29938	3.3402	.95799	20
41	708	.29970	.3367	791	19
42	736	.30001	.3332	782	18
43	764	033	.3297	774	17
44	792	065	.3261	766	16
45	.28820	.30067	3.3226	.95757	15
46	847	128	.3191	749	14
47	875	160	.3156	740	13
48	903	192	.3122	732	12
49	931	224	.3087	724	11
50	.28959	.30255	3.3052	.95715	10
51	.28987	287	.3017	707	9
52	.29015	319	.2983	698	8
53	042	351	.2948	690	7
54	070	382	.2914	681	6
55	.29068	.30414	3.2879	.95673	5
56	126	446	.2845	664	4
57	154	478	.2811	656	3
58	182	509	.2777	647	2
59	209	541	.2743	639	1
60	.29237	.30573	3.2709	.95630	0
	Cos	Ctn	Tan	Sin	'

73°

'	Sin	Tan	Ctn	Cos	'
0	.29237	.30573	3.2709	.95630	60
1	265	605	.2675	622	59
2	293	637	.2641	613	58
3	321	669	.2607	605	57
4	348	700	.2573	596	56
5	.29376	.30732	3.2539	.95588	55
6	404	761	.2506	579	54
7	432	796	.2472	571	53
8	460	828	.2438	562	52
9	487	860	.2405	554	51
10	.29515	.30891	3.2371	.95545	50
11	543	923	.2338	536	49
12	571	955	.2305	528	48
13	599	.30987	.2272	519	47
14	626	.31019	.2238	511	46
15	.29654	.31051	3.2205	.95502	45
16	682	083	.2172	493	44
17	710	115	.2139	485	43
18	737	147	.2106	476	42
19	765	178	.2073	467	41
20	.29793	.31210	3.2041	.95459	40
21	821	242	.2008	450	39
22	849	274	.1975	441	38
23	876	306	.1943	433	37
24	904	338	.1910	424	36
25	.29932	.31370	3.1878	.95415	35
26	960	402	.1845	407	34
27	.29987	431	.1813	398	33
28	.30045	466	.1780	389	32
29	043	498	.1748	380	31
30	.30071	.31530	3.1746	.95372	30
31	098	562	.1684	363	29
32	126	594	.1652	354	28
33	154	626	.1620	345	27
34	182	658	.1588	337	26
35	.30209	.31690	3.1556	.95328	25
36	237	722	.1524	319	24
37	265	754	.1492	310	23
38	292	786	.1460	301	22
39	320	818	.1429	293	21
40	.30348	.31850	3.1397	.95284	20
41	376	882	.1366	275	19
42	403	914	.1334	266	18
43	431	946	.1303	257	17
44	459	.31978	.1271	248	16
45	.30486	.32010	3.1240	.95240	15
46	514	042	.1209	231	14
47	542	074	.1178	222	13
48	570	106	.1146	213	12
49	597	139	.1115	204	11
50	.30625	.32171	3.1084	.95195	10
51	653	203	.1053	186	9
52	680	235	.1022	177	8
53	708	267	.0991	168	7
54	736	299	.0961	159	6
55	.30763	.32331	3.0930	.95150	5
56	791	363	.0899	142	4
57	819	396	.0868	133	3
58	846	428	.0838	124	2
59	874	460	.0807	115	1
60	.30902	.32492	3.0777	.95106	0
	Cos	Ctn	Tan	Sin	'

72°

'	Sin	Tan	Ctn	Cos	'
0	.30902	.32492	3.0777	.95106	60
1	929	524	.0746	.097	59
2	957	556	.0716	.088	58
3	.30985	588	.0686	.079	57
4	.31012	621	.0655	.070	56
5	.31040	.32653	3.0625	.95061	55
6	068	685	.0595	.052	54
7	095	717	.0565	.043	53
8	123	749	.0535	.033	52
9	151	782	.0505	.024	51
10	.31178	.32814	3.0475	.95015	50
11	206	846	.0445	.95006	49
12	233	878	.0415	.94997	48
13	261	911	.0385	.94987	47
14	289	943	.0356	.94979	46
15	.31316	.32975	3.0326	.94970	45
16	344	.33007	.0296	.961	44
17	372	040	.0267	.952	43
18	399	072	.0237	.943	42
19	427	104	.0208	.933	41
20	.31454	.33136	3.0178	.94924	40
21	452	169	.0149	.915	39
22	510	201	.0120	.906	38
23	537	233	.0090	.897	37
24	565	266	.0061	.888	36
25	.31593	.33298	3.0032	.94878	35
26	620	330	3.0003	.869	34
27	648	363	2.9974	.860	33
28	675	395	.9945	.851	32
29	703	427	.9916	.842	31
30	.31730	.33460	2.9887	.94832	30
31	758	492	.9858	.823	29
32	786	524	.9829	.814	28
33	813	557	.9800	.805	27
34	841	589	.9772	.795	26
35	.31868	.33621	2.9743	.94786	25
36	896	654	.9714	.777	24
37	923	686	.9686	.768	23
38	951	718	.9657	.758	22
39	.31979	751	.9629	.749	21
40	.32006	.33783	2.9600	.94740	20
41	034	816	.9572	.730	19
42	061	848	.9544	.721	18
43	089	881	.9515	.712	17
44	116	913	.9487	.702	16
45	.32144	.33945	2.9459	.94693	15
46	171	.33978	.9431	.684	14
47	199	.34010	.9403	.674	13
48	227	043	.9375	.665	12
49	254	075	.9347	.656	11
50	.32282	.34108	2.9319	.94646	10
51	309	140	.9291	.637	9
52	337	173	.9263	.627	8
53	364	205	.9235	.618	7
54	392	238	.9208	.609	6
55	.32419	.34270	2.9180	.94599	5
56	447	303	.9152	.590	4
57	474	335	.9125	.580	3
58	502	368	.9097	.571	2
59	529	400	.9070	.561	1
60	.32557	.34433	2.9042	.94552	0
	Cos	Ctn	Tan	Sin	'

71°

'	Sin	Tan	Ctn	Cos	'
0	.32557	.34433	2.9042	.94552	60
1	584	465	.9015	.542	59
2	612	498	.8987	.533	58
3	639	530	.8960	.523	57
4	667	563	.8933	.514	56
5	.32694	.34596	2.8905	.94504	55
6	722	628	.8878	.495	54
7	749	661	.8851	.485	53
8	777	693	.8824	.476	52
9	804	726	.8797	.466	51
10	.32832	.34758	2.8770	.94457	50
11	859	791	.8743	.447	49
12	887	824	.8716	.438	48
13	914	856	.8689	.428	47
14	942	889	.8662	.418	46
15	.32969	.34922	2.8636	.94409	45
16	.32997	954	.8609	.399	44
17	.33024	.34987	.8582	.390	43
18	051	.35020	.8556	.380	42
19	079	052	.8529	.370	41
20	.33106	.35085	2.8502	.94361	40
21	134	118	.8476	.351	39
22	161	150	.8449	.342	38
23	189	183	.8423	.332	37
24	216	216	.8397	.322	36
25	.33244	.35248	2.8370	.94313	35
26	271	281	.8344	.303	34
27	298	314	.8318	.293	33
28	326	346	.8291	.284	32
29	353	379	.8265	.274	31
30	.33381	.35412	2.8239	.94264	30
31	408	445	.8213	.254	29
32	436	477	.8187	.245	28
33	463	510	.8161	.235	27
34	490	543	.8135	.225	26
35	.33518	.35576	2.8109	.94215	25
36	545	608	.8083	.206	24
37	573	641	.8057	.196	23
38	600	674	.8032	.186	22
39	627	707	.8006	.176	21
40	.33655	.35740	2.7980	.94167	20
41	682	772	.7955	.157	19
42	710	805	.7929	.147	18
43	737	838	.7903	.137	17
44	764	871	.7878	.127	16
45	.33792	.35904	2.7852	.94118	15
46	819	937	.7827	.108	14
47	846	.35969	.7801	.098	13
48	874	.36002	.7776	.088	12
49	901	035	.7751	.078	11
50	.33929	.36068	2.7725	.94068	10
51	956	101	.7700	.058	9
52	.33983	134	.7675	.049	8
53	.34011	167	.7650	.039	7
54	038	199	.7625	.029	6
55	.34065	.36232	2.7600	.94019	5
56	093	265	.7575	.94009	4
57	120	298	.7550	.93999	3
58	147	331	.7525	.93989	2
59	175	364	.7500	.93979	1
60	.34202	.36397	2.7475	.93969	0
	Cos	Ctn	Tan	Sin	'

70°

'	Sin	Tan	Ctn	Cos	'
0	.34202	.36397	2.7475	.93069	60
1	229	430	.7450	959	59
2	257	463	.7425	949	58
3	284	496	.7400	939	57
4	311	529	.7376	929	56
5	.34339	.36562	2.7351	.93919	55
6	366	595	.7326	909	54
7	393	628	.7302	899	53
8	421	661	.7277	889	52
9	448	694	.7253	879	51
10	.34475	.36727	2.7228	.93869	50
11	503	760	.7204	859	49
12	530	793	.7179	849	48
13	557	826	.7155	839	47
14	584	859	.7130	829	46
15	.34612	.36892	2.7106	.93819	45
16	639	925	.7082	809	44
17	666	958	.7058	799	43
18	694	.36991	.7034	789	42
19	721	.37024	.7009	779	41
20	.34748	.37057	2.6985	.93769	40
21	775	090	.6961	759	39
22	803	123	.6937	748	38
23	830	157	.6913	738	37
24	857	190	.6889	728	36
25	.34884	.37223	2.6865	.93718	35
26	912	256	.6841	708	34
27	939	289	.6818	698	33
28	966	322	.6794	688	32
29	.34993	355	.6770	677	31
30	.35021	.37388	2.6746	.93667	30
31	048	422	.6723	657	29
32	075	455	.6699	647	28
33	102	488	.6675	637	27
34	130	521	.6652	626	26
35	.35157	.37554	2.6628	.93616	25
36	184	588	.6605	606	24
37	211	621	.6581	596	23
38	239	654	.6558	585	22
39	266	687	.6534	575	21
40	.35293	.37720	2.6511	.93565	20
41	320	754	.6488	555	19
42	347	787	.6464	544	18
43	375	820	.6441	534	17
44	402	853	.6418	524	16
45	.35429	.37887	2.6395	.93514	15
46	456	920	.6371	503	14
47	484	953	.6348	493	13
48	511	.37986	.6325	483	12
49	538	.38020	.6302	472	11
50	.35565	.38053	2.6279	.93462	10
51	592	086	.6256	452	9
52	619	120	.6233	441	8
53	647	153	.6210	431	7
54	674	186	.6187	420	6
55	.35701	.38220	2.6165	.93410	5
56	728	253	.6142	400	4
57	755	286	.6119	389	3
58	782	320	.6096	379	2
59	810	353	.6074	368	1
60	.35837	.38386	2.6051	.93358	0
Cos	Ctn	Tan	Sin	'	

'	Sin	Tan	Ctn	Cos	'
0	.35837	.38386	2.6051	.93358	60
1	864	420	.6028	348	59
2	891	453	.6006	337	58
3	918	487	.5983	327	57
4	945	520	.5961	316	56
5	.35973	.38553	2.5938	.93306	55
6	.36000	587	.5916	295	54
7	027	620	.5893	285	53
8	054	654	.5871	274	52
9	081	687	.5848	264	51
10	.36108	.38721	2.5826	.93253	50
11	135	754	.5804	243	49
12	162	787	.5782	232	48
13	190	821	.5759	222	47
14	217	854	.5737	211	46
15	.36244	.38888	2.5715	.93201	45
16	271	921	.5693	190	44
17	298	955	.5671	180	43
18	325	.38988	.5649	169	42
19	352	.39022	.5627	159	41
20	.36379	.39055	2.5605	.93148	40
21	406	089	.5583	137	39
22	434	122	.5561	127	38
23	461	156	.5539	116	37
24	488	190	.5517	106	36
25	.36515	.39223	2.5495	.93095	35
26	542	257	.5473	084	34
27	569	290	.5452	074	33
28	596	324	.5430	063	32
29	623	357	.5408	052	31
30	.36650	.39391	2.5386	.93042	30
31	677	425	.5365	031	29
32	704	458	.5343	020	28
33	731	492	.5322	.93010	27
34	758	526	.5300	.92999	26
35	.36785	.39559	2.5279	.92988	25
36	812	593	.5257	978	24
37	839	626	.5236	967	23
38	867	660	.5214	956	22
39	894	694	.5193	945	21
40	.36921	.39727	2.5172	.92935	20
41	948	761	.5150	924	19
42	.36975	795	.5129	913	18
43	.37002	829	.5108	902	17
44	029	862	.5086	892	16
45	.37056	.39896	2.5065	.92881	15
46	083	930	.5044	870	14
47	110	963	.5023	859	13
48	137	.39997	.5002	849	12
49	164	.40031	.4981	838	11
50	.37191	.40065	2.4960	.92827	10
51	218	098	.4939	816	9
52	245	132	.4918	805	8
53	272	166	.4897	794	7
54	299	200	.4876	784	6
55	.37326	.40234	2.4855	.92773	5
56	353	267	.4834	762	4
57	380	301	.4813	751	3
58	407	335	.4792	740	2
59	434	369	.4772	729	1
60	.37461	.40403	2.4751	.92718	0
Cos	Ctn	Tan	Sin	'	

'	Sin	Tan	Ctn	Cos	
0	.37461	.40403	2.4751	.92718	60
1	.488	436	.4730	707	59
2	515	470	.4709	697	58
3	542	504	.4689	686	57
4	569	538	.4668	675	56
5	.37595	.40572	2.4648	.92664	55
6	622	606	.4627	653	54
7	649	640	.4606	642	53
8	676	674	.4586	631	52
9	703	707	.4566	620	51
10	.37730	.40741	2.4545	.92609	50
11	757	775	.4525	598	49
12	784	809	.4504	587	48
13	811	843	.4484	576	47
14	838	877	.4464	565	46
15	.37865	.40911	2.4443	.92554	45
16	892	945	.4423	543	44
17	919	.40979	.4403	532	43
18	946	.41013	.4383	521	42
19	973	047	.4362	510	41
20	.37999	.41081	2.4342	.92499	40
21	.38026	115	.4322	488	39
22	053	149	.4302	477	38
23	080	183	.4282	466	37
24	107	217	.4262	455	36
25	.38134	.41251	2.4242	.92444	35
26	161	285	.4222	432	34
27	188	319	.4202	421	33
28	215	353	.4182	410	32
29	241	387	.4162	399	31
30	.38268	.41421	2.4142	.92388	30
31	295	455	.4122	377	29
32	322	490	.4102	366	28
33	349	524	.4083	355	27
34	376	558	.4063	343	26
35	.38403	.41592	2.4043	.92332	25
36	430	626	.4023	321	24
37	456	660	.4004	310	23
38	483	694	.3984	299	22
39	510	728	.3964	287	21
40	.38537	.41763	2.3945	.92276	20
41	564	797	.3925	265	19
42	591	831	.3906	254	18
43	617	865	.3886	243	17
44	644	899	.3867	231	16
45	.38671	.41933	2.3847	.92220	15
46	698	.41968	.3828	209	14
47	725	.42002	.3808	198	13
48	752	036	.3789	186	12
49	778	070	.3770	175	11
50	.38805	.42105	2.3750	.92164	10
51	832	139	.3731	152	9
52	859	173	.3712	141	8
53	886	207	.3693	130	7
54	912	242	.3673	119	6
55	.38939	.42276	2.3654	.92107	5
56	966	310	.3635	096	4
57	.38993	345	.3616	085	3
58	.39020	379	.3597	073	2
59	046	413	.3578	062	1
60	.39073	.42447	2.3559	.92050	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.39073	.42447	2.3559	.92050	60
1	100	482	.3539	039	59
2	127	516	.3520	028	58
3	153	551	.3501	016	57
4	180	585	.3483	.92005	56
5	.39207	.42619	2.3464	.91994	55
6	234	654	.3445	982	54
7	260	688	.3426	971	53
8	287	722	.3407	959	52
9	314	757	.3388	948	51
10	.39341	.42791	2.3369	.91936	50
11	367	826	.3351	925	49
12	394	860	.3332	914	48
13	421	894	.3313	902	47
14	448	929	.3294	891	46
15	.39474	.42963	2.3276	.91879	45
16	501	.42998	.3257	868	44
17	528	.43032	.3238	856	43
18	555	067	.3220	845	42
19	581	101	.3201	833	41
20	.39608	.43136	2.3183	.91822	40
21	635	170	.3164	810	39
22	661	205	.3146	799	38
23	688	239	.3127	787	37
24	715	274	.3109	775	36
25	.39741	.43308	2.3090	.91764	35
26	768	343	.3072	752	34
27	795	378	.3053	741	33
28	822	412	.3035	729	32
29	848	447	.3017	718	31
30	.39875	.43481	2.2998	.91706	30
31	902	516	.2980	694	29
32	928	550	.2962	683	28
33	955	585	.2944	671	27
34	.39982	620	.2925	660	26
35	.40008	.43654	2.2907	.91648	25
36	035	689	.2889	636	24
37	062	724	.2871	625	23
38	088	758	.2853	613	22
39	115	793	.2835	601	21
40	.40141	.43828	2.2817	.91590	20
41	168	862	.2799	578	19
42	195	897	.2781	566	18
43	221	932	.2763	555	17
44	248	.43966	.2745	543	16
45	.40275	.44001	2.2727	.91531	15
46	301	036	.2709	519	14
47	328	071	.2691	508	13
48	355	105	.2673	496	12
49	381	140	.2655	484	11
50	.40408	.44175	2.2637	.91472	10
51	434	210	.2620	461	9
52	461	244	.2602	449	8
53	488	279	.2584	437	7
54	514	314	.2566	425	6
55	.40541	.44349	2.2549	.91414	5
56	567	384	.2531	402	4
57	594	418	.2513	390	3
58	621	453	.2496	378	2
59	647	488	.2478	366	1
60	.40674	.44523	2.2460	.91355	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.40674	.44523	2.2460	.91355	60
1	700	558	.2113	343	59
2	727	593	.2125	331	58
3	753	627	.2108	319	57
4	780	662	.2390	307	56
5	40806	.44697	2.2973	.91295	55
6	833	732	.2355	283	54
7	860	767	.2338	272	53
8	886	802	.2320	260	52
9	913	837	.2303	248	51
10	.40939	.44872	2.2286	.91236	50
11	966	907	.2268	224	49
12	.40992	942	.2251	212	48
13	.41019	.44977	.2231	200	47
14	045	.45012	.2216	188	46
15	.41072	.45047	2.2199	.91176	45
16	098	082	.2182	164	44
17	125	117	.2165	152	43
18	151	152	.2148	140	42
19	178	187	.2130	128	41
20	.41204	.45222	2.2113	.91116	40
21	231	257	.2096	104	39
22	257	292	.2079	092	38
23	284	327	.2062	080	37
24	310	362	.2045	068	36
25	.41337	.45397	2.2028	.91056	35
26	363	432	.2011	044	34
27	390	467	.1994	032	33
28	416	502	.1977	020	32
29	443	538	.1960	.91008	31
30	.41469	.45573	2.1943	.90996	30
31	496	608	.1926	984	29
32	522	643	.1909	972	28
33	549	678	.1892	960	27
34	575	713	.1876	948	26
35	.41602	.45748	2.1859	.90936	25
36	628	784	.1842	924	24
37	655	819	.1825	911	23
38	681	854	.1808	899	22
39	707	889	.1792	887	21
40	.41734	.45924	2.1775	.90875	20
41	760	960	.1758	863	19
42	787	.45995	.1742	851	18
43	813	.46030	.1725	839	17
44	840	065	.1708	826	16
45	.41866	.46101	2.1692	.90814	15
46	892	136	.1675	802	14
47	919	171	.1659	790	13
48	945	206	.1642	778	12
49	972	242	.1625	766	11
50	.41998	.46277	2.1609	.90753	10
51	.42024	312	.1592	741	9
52	051	348	.1576	729	8
53	077	383	.1560	717	7
54	104	418	.1543	704	6
55	.42130	.46454	2.1527	.90692	5
56	156	489	.1510	680	4
57	183	525	.1494	668	3
58	209	560	.1478	655	2
59	235	595	.1461	643	1
60	.42262	.46631	2.1445	.90631	0
	Cos	Ctn	Tan	Sin	

65°

'	Sin	Tan	Ctn	Cos	
0	.42262	.46631	2.1445	.90631	60
1	288	666	.1429	618	59
2	315	702	.1413	606	58
3	341	737	.1396	594	57
4	367	772	.1380	582	56
5	.42394	.46808	2.1364	.90569	55
6	420	843	.1348	557	54
7	446	879	.1332	545	53
8	473	914	.1315	532	52
9	499	950	.1299	520	51
10	.42525	.46985	2.1283	.90507	50
11	552	.47021	.1267	495	49
12	578	056	.1251	483	48
13	604	092	.1235	470	47
14	631	128	.1219	458	46
15	.42657	.47163	2.1203	.90446	45
16	683	199	.1187	433	44
17	709	234	.1171	421	43
18	736	270	.1155	408	42
19	762	305	.1139	396	41
20	.42788	.47341	2.1123	.90383	40
21	815	377	.1107	371	39
22	841	412	.1092	358	38
23	867	448	.1076	346	37
24	894	483	.1060	334	36
25	.42920	.47519	2.1044	.90321	35
26	946	555	.1028	309	34
27	972	590	.1013	296	33
28	.42999	626	.0997	284	32
29	.43025	662	.0981	271	31
30	.43051	.47698	2.0965	.90259	30
31	077	733	.0950	246	29
32	104	769	.0934	233	28
33	130	805	.0918	221	27
34	156	840	.0903	208	26
35	.43182	.47876	2.0887	.90196	25
36	209	912	.0872	183	24
37	235	948	.0856	171	23
38	261	.47984	.0840	158	22
39	287	.48019	.0825	146	21
40	.43313	.48055	2.0809	.90133	20
41	340	091	.0794	120	19
42	366	127	.0778	108	18
43	392	163	.0763	095	17
44	418	198	.0748	082	16
45	.43445	.48234	2.0732	.90070	15
46	471	270	.0717	057	14
47	497	306	.0701	045	13
48	523	342	.0686	032	12
49	549	378	.0671	019	11
50	.43575	.48414	2.0655	.90007	10
51	602	450	.0640	.89944	9
52	628	486	.0625	981	8
53	654	521	.0609	968	7
54	680	557	.0594	956	6
55	.43706	.48593	2.0579	.89913	5
56	733	629	.0564	930	4
57	759	665	.0549	918	3
58	785	701	.0533	905	2
59	811	737	.0518	892	1
60	.43837	.48773	2.0503	.89879	0
	Cos	Ctn	Tan	Sin	

64°

'	Sin	Tan	Ctn	Cos	
0	.43857	.48773	2.0503	.89879	60
1	863	809	.0488	867	59
2	889	845	.0473	854	58
3	916	881	.0458	841	57
4	942	917	.0443	828	56
5	.43968	.48953	2.0428	.89816	55
6	.43994	.48989	.0413	803	54
7	.44020	.49026	.0398	790	53
8	046	062	.0383	777	52
9	072	098	.0368	764	51
10	.44098	.49134	2.0353	.89752	50
11	124	170	.0348	739	49
12	151	206	.0333	726	48
13	177	242	.0318	713	47
14	203	278	.0293	700	46
15	.44229	.49315	2.0278	.89687	45
16	255	351	.0263	674	44
17	281	387	.0248	662	43
18	307	423	.0233	649	42
19	333	459	.0219	636	41
20	.44359	.49495	2.0204	.89623	40
21	385	532	.0189	610	39
22	411	568	.0174	597	38
23	437	604	.0160	584	37
24	464	640	.0145	571	36
25	.44490	.49677	2.0130	.89558	35
26	516	713	.0115	545	34
27	542	749	.0101	532	33
28	568	785	.0086	519	32
29	594	822	.0072	506	31
30	.44620	.49858	2.0057	.89493	30
31	646	894	.0042	480	29
32	672	931	.0028	467	28
33	698	.49967	2.0013	454	27
34	724	.50004	1.9999	441	26
35	.44750	.50040	1.9984	.89428	25
36	776	076	.9970	415	24
37	802	113	.9955	402	23
38	828	149	.9941	389	22
39	854	185	.9926	376	21
40	.44880	.50222	1.9912	.89363	20
41	906	258	.9897	350	19
42	932	295	.9883	337	18
43	958	331	.9868	324	17
44	.44984	.50368	.9854	311	16
45	.45010	.50404	1.9840	.89298	15
46	036	441	.9825	285	14
47	062	477	.9811	272	13
48	088	514	.9797	259	12
49	114	550	.9782	245	11
50	.45140	.50587	1.9768	.89232	10
51	166	623	.9754	219	9
52	192	660	.9740	206	8
53	218	696	.9725	193	7
54	243	733	.9711	180	6
55	.45269	.50769	1.9697	.89167	5
56	295	806	.9683	153	4
57	321	843	.9669	140	3
58	347	879	.9654	127	2
59	373	916	.9640	114	1
60	.45399	.50953	1.9626	.89101	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.45399	.50953	1.9626	.89101	60
1	425	.50989	.9612	087	59
2	451	.51026	.9598	074	58
3	477	063	.9584	061	57
4	503	099	.9570	048	56
5	.45529	.51136	1.9556	.89035	55
6	554	173	.9542	021	54
7	580	209	.9528	.89008	53
8	606	246	.9514	.88995	52
9	632	283	.9500	981	51
10	.45658	.51319	1.9486	.88968	50
11	684	356	.9472	955	49
12	710	393	.9458	942	48
13	736	430	.9444	928	47
14	762	467	.9430	915	46
15	.45787	.51503	1.9416	.88902	45
16	813	540	.9402	888	44
17	839	577	.9388	875	43
18	865	614	.9375	862	42
19	891	651	.9361	848	41
20	.45917	.51688	1.9347	.88835	40
21	942	724	.9333	822	39
22	968	761	.9319	808	38
23	.45994	798	.9306	795	37
24	.46020	835	.9292	782	36
25	.46046	.51872	1.9278	.88768	35
26	072	909	.9265	755	34
27	097	946	.9251	741	33
28	123	.51983	.9237	728	32
29	149	.52020	.9223	715	31
30	.46175	.52057	1.9210	.88701	30
31	201	094	.9196	688	29
32	226	131	.9183	674	28
33	252	168	.9169	661	27
34	278	205	.9155	647	26
35	.46304	.52242	1.9142	.88634	25
36	330	279	.9128	620	24
37	355	316	.9115	607	23
38	381	353	.9101	593	22
39	407	390	.9088	580	21
40	.46433	.52427	1.9074	.88566	20
41	458	464	.9061	553	19
42	484	501	.9047	539	18
43	510	538	.9034	526	17
44	536	575	.9020	512	16
45	.46561	.52613	1.9007	.88499	15
46	587	650	.9003	485	14
47	613	687	.8980	472	13
48	639	724	.8967	458	12
49	664	761	.8953	445	11
50	.46690	.52798	1.8940	.88431	10
51	716	836	.8927	417	9
52	742	873	.8913	404	8
53	767	910	.8900	390	7
54	793	947	.8887	377	6
55	.46819	.52985	1.8873	.88363	5
56	844	.53022	.8860	349	4
57	870	059	.8847	336	3
58	896	096	.8834	322	2
59	921	134	.8820	308	1
60	.46947	.53171	1.8807	.88295	0
	Cos	Ctn	Tan	Sin	'

/	Sin	Tan	Ctn	Cos	
0	.46947	.53171	1.8807	.88295	60
1	.973	.208	.8794	.281	59
2	.46999	.246	.8781	.267	58
3	.47024	.283	.8768	.254	57
4	.050	.320	.8755	.240	56
5	.47076	.53358	1.8741	.88226	55
6	.101	.395	.8728	.213	54
7	.127	.432	.8715	.199	53
8	.153	.470	.8702	.185	52
9	.178	.507	.8689	.172	51
10	.47204	.53545	1.8676	.88158	50
11	.229	.582	.8663	.144	49
12	.255	.620	.8650	.130	48
13	.281	.657	.8637	.117	47
14	.306	.694	.8624	.103	46
15	.47332	.53732	1.8611	.88089	45
16	.358	.769	.8598	.075	44
17	.383	.807	.8585	.062	43
18	.409	.844	.8572	.048	42
19	.434	.882	.8559	.034	41
20	.47460	.53920	1.8546	.88020	40
21	.486	.957	.8533	.88006	39
22	.511	.53995	.8520	.87993	38
23	.537	.54032	.8507	.979	37
24	.562	.070	.8495	.965	36
25	.47588	.54107	1.8482	.87951	35
26	.614	.145	.8469	.937	34
27	.639	.183	.8456	.923	33
28	.665	.220	.8443	.909	32
29	.690	.258	.8430	.896	31
30	.47716	.54296	1.8418	.87882	30
31	.711	.333	.8405	.868	29
32	.767	.371	.8392	.854	28
33	.793	.409	.8379	.840	27
34	.818	.446	.8367	.826	26
35	.47844	.54484	1.8354	.87812	25
36	.869	.522	.8341	.798	24
37	.895	.560	.8329	.784	23
38	.920	.597	.8316	.770	22
39	.946	.635	.8303	.756	21
40	.47971	.54673	1.8291	.87743	20
41	.47997	.711	.8278	.729	19
42	.48022	.748	.8265	.715	18
43	.048	.786	.8253	.701	17
44	.073	.824	.8240	.687	16
45	.48099	.54862	1.8228	.87673	15
46	.124	.900	.8215	.659	14
47	.150	.938	.8202	.645	13
48	.175	.54975	.8190	.631	12
49	.201	.55013	.8177	.617	11
50	.48226	.55051	1.8165	.87603	10
51	.252	.089	.8152	.589	9
52	.277	.127	.8140	.575	8
53	.303	.165	.8127	.561	7
54	.328	.203	.8115	.546	6
55	.48354	.55241	1.8103	.87532	5
56	.379	.279	.8090	.518	4
57	.405	.317	.8078	.504	3
58	.430	.355	.8065	.490	2
59	.456	.393	.8053	.476	1
60	.48481	.55431	1.8040	.87462	0
	Cos	Ctn	Tan	Sin	/

61°

/	Sin	Tan	Ctn	Cos	
0	.48481	.55431	1.8040	.87462	60
1	.506	.469	.8028	.448	59
2	.532	.507	.8016	.434	58
3	.557	.545	.8003	.420	57
4	.583	.583	.7991	.406	56
5	.48608	.55621	1.7979	.87391	55
6	.634	.659	.7966	.377	54
7	.659	.697	.7954	.363	53
8	.684	.736	.7942	.349	52
9	.710	.774	.7930	.335	51
10	.48735	.55812	1.7917	.87321	50
11	.761	.850	.7905	.306	49
12	.786	.888	.7893	.292	48
13	.811	.926	.7881	.278	47
14	.837	.55964	.7868	.264	46
15	.48862	.56003	1.7856	.87250	45
16	.888	.041	.7844	.235	44
17	.913	.079	.7832	.221	43
18	.938	.117	.7820	.207	42
19	.964	.156	.7808	.193	41
20	.48989	.56194	1.7796	.87178	40
21	.49014	.232	.7783	.164	39
22	.040	.270	.7771	.150	38
23	.065	.309	.7759	.136	37
24	.090	.347	.7747	.121	36
25	.49116	.56385	1.7735	.87107	35
26	.141	.424	.7723	.093	34
27	.166	.462	.7711	.079	33
28	.192	.501	.7699	.064	32
29	.217	.539	.7687	.050	31
30	.49242	.56577	1.7675	.87036	30
31	.268	.616	.7663	.021	29
32	.293	.654	.7651	.87007	28
33	.318	.693	.7639	.86993	27
34	.344	.731	.7627	.978	26
35	.49369	.56769	1.7615	.86964	25
36	.394	.808	.7603	.949	24
37	.419	.846	.7591	.935	23
38	.445	.885	.7579	.921	22
39	.470	.923	.7567	.906	21
40	.49495	.56962	1.7556	.86892	20
41	.521	.57000	.7544	.878	19
42	.546	.039	.7532	.863	18
43	.571	.078	.7520	.849	17
44	.596	.116	.7508	.834	16
45	.49622	.57155	1.7496	.86820	15
46	.647	.193	.7485	.805	14
47	.672	.232	.7473	.791	13
48	.697	.271	.7461	.777	12
49	.723	.309	.7449	.762	11
50	.49748	.57348	1.7437	.86748	10
51	.773	.386	.7426	.733	9
52	.798	.425	.7414	.719	8
53	.824	.464	.7402	.704	7
54	.849	.503	.7391	.690	6
55	.49874	.57541	1.7379	.86675	5
56	.899	.580	.7367	.661	4
57	.924	.619	.7355	.646	3
58	.950	.657	.7344	.632	2
59	.49975	.696	.7332	.617	1
60	.50000	.57735	1.7321	.86603	0
	Cos	Ctn	Tan	Sin	/

60°

'	Sin	Tan	Ctn	Cos	'
0	.50000	.57735	1.7321	.86603	60
1	025	774	.7309	.588	59
2	050	813	.7297	.573	58
3	076	851	.7286	.559	57
4	101	890	.7274	.544	56
5	.50126	.57929	1.7262	.86530	55
6	151	.57968	.7251	.515	54
7	176	.58007	.7239	.501	53
8	201	046	.7228	.486	52
9	227	085	.7216	.471	51
10	.50252	.58124	1.7205	.86457	50
11	277	162	.7193	.442	49
12	302	201	.7182	.427	48
13	327	240	.7170	.413	47
14	352	279	.7159	.398	46
15	.50377	.58318	1.7147	.86384	45
16	403	357	.7136	.369	44
17	428	396	.7124	.354	43
18	453	435	.7113	.340	42
19	478	474	.7102	.325	41
20	.50503	.58513	1.7090	.86310	40
21	528	552	.7079	.295	39
22	553	591	.7067	.281	38
23	578	631	.7056	.266	37
24	603	670	.7045	.251	36
25	.50628	.58709	1.7033	.86237	35
26	654	748	.7022	.222	34
27	679	787	.7011	.207	33
28	704	826	.6999	.192	32
29	729	865	.6988	.178	31
30	.50754	.58905	1.6977	.86163	30
31	779	914	.6965	.148	29
32	804	.58983	.6954	.133	28
33	829	.59022	.6943	.119	27
34	854	061	.6932	.104	26
35	.50879	.59101	1.6920	.86089	25
36	904	140	.6909	.074	24
37	929	179	.6898	.059	23
38	954	218	.6887	.045	22
39	.50979	258	.6875	.030	21
40	.51004	.59297	1.6864	.86015	20
41	029	336	.6853	.86000	19
42	054	376	.6842	.85985	18
43	079	415	.6831	.970	17
44	104	454	.6820	.956	16
45	.51129	.59494	1.6808	.85941	15
46	154	533	.6797	.926	14
47	179	573	.6786	.911	13
48	204	612	.6775	.896	12
49	229	651	.6764	.881	11
50	.51254	.59691	1.6753	.85866	10
51	279	730	.6742	.851	9
52	304	770	.6731	.836	8
53	329	809	.6720	.821	7
54	354	849	.6709	.806	6
55	.51379	.59888	1.6698	.85792	5
56	404	928	.6687	.777	4
57	429	.59967	.6676	.762	3
58	454	.60007	.6665	.747	2
59	479	046	.6654	.732	1
60	.51504	.60086	1.6643	.85717	0
	Cos	Ctn	Tan	Sin	'

59°

'	Sin	Tan	Ctn	Cos	'
0	.51504	.60086	1.6643	.85717	60
1	529	126	.6632	.702	59
2	554	165	.6621	.687	58
3	579	205	.6610	.672	57
4	604	245	.6599	.657	56
5	.51628	.60284	1.6588	.85642	55
6	653	324	.6577	.627	54
7	678	364	.6566	.612	53
8	703	403	.6555	.597	52
9	728	443	.6545	.582	51
10	.51753	.60483	1.6534	.85567	50
11	778	522	.6523	.551	49
12	803	562	.6512	.536	48
13	828	602	.6501	.521	47
14	852	642	.6490	.506	46
15	.51877	.60681	1.6479	.85491	45
16	902	721	.6469	.476	44
17	927	761	.6458	.461	43
18	952	801	.6447	.446	42
19	.51977	841	.6436	.431	41
20	.52002	.60881	1.6426	.85416	40
21	026	921	.6415	.401	39
22	051	.60960	.6404	.385	38
23	076	.61000	.6393	.370	37
24	101	040	.6383	.355	36
25	.52126	.61080	1.6372	.85340	35
26	151	120	.6361	.325	34
27	175	160	.6351	.310	33
28	200	200	.6340	.294	32
29	225	240	.6329	.279	31
30	.52250	.61280	1.6319	.85264	30
31	275	320	.6308	.249	29
32	299	360	.6297	.234	28
33	324	400	.6287	.218	27
34	349	440	.6276	.203	26
35	.52374	.61480	1.6265	.85188	25
36	399	520	.6255	.175	24
37	423	561	.6244	.157	23
38	448	601	.6234	.142	22
39	473	641	.6223	.127	21
40	.52498	.61681	1.6212	.85112	20
41	522	721	.6202	.096	19
42	547	761	.6191	.081	18
43	572	801	.6181	.066	17
44	597	842	.6170	.051	16
45	.52621	.61882	1.6160	.85035	15
46	646	922	.6149	.020	14
47	671	.61962	.6139	.85005	13
48	696	.62003	.6128	.84989	12
49	720	043	.6118	.974	11
50	.52745	.62083	1.6107	.84959	10
51	770	124	.6097	.943	9
52	794	164	.6087	.928	8
53	819	204	.6076	.913	7
54	844	245	.6066	.897	6
55	.52869	.62285	1.6055	.84882	5
56	893	325	.6045	.866	4
57	918	366	.6034	.851	3
58	943	406	.6024	.836	2
59	967	446	.6014	.820	1
60	.52992	.62487	1.6003	.84805	0
	Cos	Ctn	Tan	Sin	'

58°

'	Sin	Tan	Ctn	Cos	
0	.52092	.62187	1.6003	.84805	60
1	.53017	.627	.5993	.789	59
2	.041	.568	.5983	.774	58
3	.066	.608	.5972	.759	57
4	.091	.649	.5962	.743	56
5	.53115	.62689	1.5952	.84728	55
6	.140	.730	.5941	.712	54
7	.164	.770	.5931	.697	53
8	.189	.811	.5921	.681	52
9	.214	.852	.5911	.666	51
10	.53238	.62892	1.5900	.84650	50
11	.263	.933	.5890	.635	49
12	.288	.62973	.5880	.619	48
13	.312	.63014	.5869	.604	47
14	.337	.055	.5859	.588	46
15	.53351	.63095	1.5849	.84573	45
16	.386	.136	.5839	.577	44
17	.411	.177	.5829	.562	43
18	.435	.217	.5818	.546	42
19	.460	.258	.5808	.531	41
20	.53484	.63299	1.5798	.84495	40
21	.509	.310	.5788	.510	39
22	.534	.380	.5778	.494	38
23	.558	.421	.5768	.478	37
24	.583	.462	.5757	.463	36
25	.53607	.63503	1.5747	.84417	35
26	.632	.514	.5737	.402	34
27	.656	.581	.5727	.386	33
28	.681	.625	.5717	.370	32
29	.705	.666	.5707	.355	31
30	.53730	.63717	1.5697	.84339	30
31	.754	.718	.5687	.321	29
32	.779	.789	.5677	.305	28
33	.804	.830	.5667	.290	27
34	.828	.871	.5657	.275	26
35	.53853	.63912	1.5647	.84261	25
36	.877	.953	.5637	.259	24
37	.902	.63994	.5627	.244	23
38	.926	.64000	.5617	.229	22
39	.951	.076	.5607	.214	21
40	.53975	.64117	1.5597	.84183	20
41	.54000	.118	.5587	.199	19
42	.014	.119	.5577	.184	18
43	.040	.210	.5567	.169	17
44	.075	.281	.5557	.154	16
45	.54097	.64222	1.5547	.84104	15
46	.122	.365	.5537	.138	14
47	.146	.404	.5527	.123	13
48	.171	.445	.5517	.107	12
49	.195	.487	.5507	.092	11
50	.54220	.64428	1.5497	.84025	10
51	.244	.500	.5487	.076	9
52	.269	.616	.5477	.061	8
53	.293	.662	.5468	.046	7
54	.317	.093	.5458	.031	6
55	.54342	.64714	1.5448	.83946	5
56	.366	.775	.5438	.016	4
57	.391	.817	.5428	.001	3
58	.415	.858	.5418	.986	2
59	.440	.899	.5408	.971	1
60	.54464	.64941	1.5399	.83867	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	
0	.54464	.64941	1.5399	.83867	60
1	.488	.64982	.5389	.851	59
2	.513	.65024	.5379	.835	58
3	.537	.065	.5369	.819	57
4	.561	.106	.5359	.804	56
5	.54586	.65148	1.5350	.83788	55
6	.610	.189	.5340	.772	54
7	.635	.231	.5330	.756	53
8	.659	.272	.5320	.740	52
9	.683	.314	.5311	.724	51
10	.54708	.65355	1.5301	.83708	50
11	.732	.397	.5291	.692	49
12	.756	.438	.5282	.676	48
13	.781	.480	.5272	.660	47
14	.805	.521	.5262	.645	46
15	.54829	.65563	1.5253	.83629	45
16	.854	.604	.5243	.613	44
17	.878	.646	.5233	.597	43
18	.902	.688	.5224	.581	42
19	.927	.729	.5214	.565	41
20	.54951	.65771	1.5204	.83549	40
21	.975	.813	.5195	.533	39
22	.54999	.854	.5185	.517	38
23	.55024	.896	.5175	.501	37
24	.048	.938	.5166	.485	36
25	.55072	.65980	1.5156	.83469	35
26	.097	.66021	.5147	.453	34
27	.121	.063	.5137	.437	33
28	.145	.105	.5127	.421	32
29	.169	.147	.5118	.405	31
30	.55194	.66189	1.5108	.83389	30
31	.218	.230	.5099	.373	29
32	.242	.272	.5089	.356	28
33	.266	.314	.5080	.340	27
34	.291	.356	.5070	.324	26
35	.55315	.66398	1.5061	.83308	25
36	.339	.440	.5051	.292	24
37	.363	.482	.5042	.276	23
38	.388	.524	.5032	.260	22
39	.412	.566	.5023	.244	21
40	.55436	.66608	1.5013	.83228	20
41	.460	.650	.5004	.212	19
42	.484	.692	.4994	.195	18
43	.509	.734	.4985	.179	17
44	.533	.776	.4975	.163	16
45	.55557	.66818	1.4966	.83147	15
46	.581	.830	.4957	.131	14
47	.605	.902	.4947	.115	13
48	.630	.944	.4938	.098	12
49	.654	.69986	.4928	.082	11
50	.55678	.67028	1.4919	.83066	10
51	.702	.071	.4910	.050	9
52	.726	.113	.4900	.034	8
53	.750	.155	.4891	.017	7
54	.775	.197	.4882	.83001	6
55	.55799	.67239	1.4872	.82985	5
56	.823	.282	.4863	.969	4
57	.847	.324	.4854	.953	3
58	.871	.366	.4844	.936	2
59	.895	.409	.4835	.920	1
60	.55919	.67451	1.4826	.82904	0
	Cos	Ctn	Tan	Sin	'

<i>i</i>	Sin	Tan	Ctn	Cos	<i>i</i>
0	.55919	.67451	1.4826	.82904	60
1	.943	493	.4816	.887	59
2	.968	536	.4807	.871	58
3	.55992	573	.4798	.855	57
4	.56016	620	.4788	.839	56
5	.56040	.67663	1.4779	.82822	55
6	.064	705	.4770	.806	54
7	.088	748	.4761	.790	53
8	.112	790	.4751	.773	52
9	.136	832	.4742	.757	51
10	.56160	.67875	1.4733	.82741	50
11	.184	917	.4724	.724	49
12	.208	.67960	.4715	.708	48
13	.232	.68002	.4705	.692	47
14	.256	.045	.4696	.675	46
15	.56280	.68088	1.4687	.82659	45
16	.305	130	.4678	.643	44
17	.329	173	.4669	.626	43
18	.353	215	.4659	.610	42
19	.377	258	.4650	.593	41
20	.56401	.68301	1.4641	.82577	40
21	.425	343	.4632	.561	39
22	.449	386	.4623	.544	38
23	.473	.429	.4614	.528	37
24	.497	471	.4605	.511	36
25	.56521	.68514	1.4596	.82495	35
26	.545	557	.4586	.478	34
27	.569	600	.4577	.462	33
28	.593	.642	.4568	.446	32
29	.617	.685	.4559	.429	31
30	.56641	.68728	1.4550	.82413	30
31	.665	771	.4541	.406	29
32	.689	814	.4532	.390	28
33	.713	857	.4523	.373	27
34	.736	900	.4514	.357	26
35	.56760	.68942	1.4505	.82330	25
36	.784	.68985	.4496	.344	24
37	.808	.69028	.4487	.297	23
38	.832	.071	.4478	.281	22
39	.856	.114	.4469	.264	21
40	.56880	.69157	1.4460	.82248	20
41	.904	200	.4451	.231	19
42	.928	243	.4442	.214	18
43	.952	.286	.4433	.198	17
44	.56976	.329	.4424	.181	16
45	.57000	.69372	1.4415	.82165	15
46	.024	.416	.4406	.148	14
47	.047	.459	.4397	.132	13
48	.071	.502	.4388	.115	12
49	.095	.545	.4379	.098	11
50	.57119	.69588	1.4370	.82082	10
51	.143	.631	.4361	.065	9
52	.167	.675	.4352	.048	8
53	.191	.718	.4344	.032	7
54	.215	.761	.4335	.015	6
55	.57238	.69804	1.4326	.81999	5
56	.262	.847	.4317	.982	4
57	.286	.891	.4308	.965	3
58	.310	.934	.4299	.949	2
59	.334	.69977	.4290	.932	1
60	.57358	.70021	1.4281	.81915	0
	Cos	Ctn	Tan	Sin	<i>i</i>

55°

<i>i</i>	Sin	Tan	Ctn	Cos	<i>i</i>
0	.57358	.70021	1.4281	.81915	60
1	.381	.064	.4273	.899	59
2	.405	.107	.4264	.882	58
3	.429	.151	.4255	.865	57
4	.453	.194	.4246	.848	56
5	.57477	.70238	1.4237	.81832	55
6	.591	.281	.4229	.815	54
7	.614	.325	.4220	.798	53
8	.648	.368	.4211	.782	52
9	.672	.412	.4202	.765	51
10	.57596	.70455	1.4193	.81748	50
11	.619	.499	.4185	.731	49
12	.643	.542	.4176	.714	48
13	.667	.586	.4167	.698	47
14	.691	.629	.4158	.681	46
15	.57715	.70673	1.4150	.81664	45
16	.738	.717	.4141	.647	44
17	.762	.760	.4132	.631	43
18	.786	.804	.4124	.614	42
19	.810	.848	.4115	.597	41
20	.57833	.70891	1.4106	.81580	40
21	.837	.935	.4097	.563	39
22	.881	.70979	.4089	.546	38
23	.904	.71023	.4080	.530	37
24	.928	.066	.4071	.513	36
25	.57952	.71110	1.4063	.81496	35
26	.956	.154	.4054	.479	34
27	.57999	.198	.4045	.462	33
28	.58046	.242	.4037	.445	32
29	.947	.285	.4028	.428	31
30	.58070	.71329	1.4019	.81412	30
31	.094	.373	.4011	.395	29
32	.118	.417	.4002	.378	28
33	.141	.461	.3994	.361	27
34	.165	.505	.3985	.344	26
35	.58189	.71549	1.3976	.81327	25
36	.212	.593	.3968	.310	24
37	.236	.637	.3959	.293	23
38	.260	.681	.3951	.276	22
39	.283	.725	.3942	.259	21
40	.58307	.71769	1.3934	.81242	20
41	.330	.813	.3925	.225	19
42	.354	.857	.3916	.208	18
43	.378	.901	.3908	.191	17
44	.401	.946	.3899	.174	16
45	.58425	.71990	1.3891	.81157	15
46	.449	.72034	.3882	.140	14
47	.472	.078	.3874	.123	13
48	.496	.122	.3865	.106	12
49	.519	.167	.3857	.089	11
50	.58541	.72211	1.3848	.81072	10
51	.567	.255	.3840	.065	9
52	.590	.299	.3831	.048	8
53	.614	.344	.3823	.021	7
54	.637	.388	.3814	.81004	6
55	.58661	.72432	1.3806	.80987	5
56	.684	.477	.3798	.970	4
57	.708	.521	.3789	.953	3
58	.731	.565	.3781	.936	2
59	.755	.610	.3772	.919	1
60	.58779	.72654	1.3764	.80902	0
	Cos	Ctn	Tan	Sin	<i>i</i>

54°

'	Sin	Tan	Ctn	Cos	'
0	.58779	.72654	1.3764	.80902	60
1	.802	.699	.3755	.885	59
2	.826	.743	.3747	.867	58
3	.849	.788	.3739	.850	57
4	.873	.832	.3730	.833	56
5	.58896	.72877	1.3722	.80816	55
6	.920	.921	.3713	.799	54
7	.943	.72966	.3705	.782	53
8	.967	.73010	.3697	.765	52
9	.58990	.055	.3688	.748	51
10	.59014	.73100	1.3680	.80730	50
11	.037	.144	.3672	.713	49
12	.061	.189	.3663	.696	48
13	.084	.234	.3655	.679	47
14	.108	.278	.3647	.662	46
15	.59131	.73323	1.3638	.80644	45
16	.151	.368	.3630	.627	44
17	.178	.413	.3622	.610	43
18	.201	.457	.3613	.593	42
19	.225	.502	.3605	.576	41
20	.59248	.73547	1.3597	.80558	40
21	.272	.592	.3588	.541	39
22	.295	.637	.3580	.524	38
23	.318	.681	.3572	.507	37
24	.342	.726	.3564	.489	36
25	.59365	.73771	1.3555	.80472	35
26	.389	.816	.3547	.455	34
27	.412	.861	.3539	.438	33
28	.436	.906	.3531	.420	32
29	.459	.951	.3522	.403	31
30	.59482	.73996	1.3514	.80386	30
31	.506	.74041	.3506	.368	29
32	.529	.086	.3498	.351	28
33	.552	.131	.3490	.334	27
34	.576	.176	.3481	.316	26
35	.59599	.74221	1.3473	.80299	25
36	.622	.267	.3465	.282	24
37	.646	.312	.3457	.264	23
38	.669	.357	.3449	.247	22
39	.693	.402	.3440	.230	21
40	.59716	.74447	1.3432	.80212	20
41	.739	.492	.3424	.195	19
42	.763	.538	.3416	.178	18
43	.786	.583	.3408	.160	17
44	.809	.628	.3400	.143	16
45	.59832	.74674	1.3392	.80125	15
46	.856	.719	.3384	.108	14
47	.879	.764	.3375	.091	13
48	.902	.810	.3367	.073	12
49	.926	.855	.3359	.056	11
50	.59949	.74900	1.3351	.80038	10
51	.972	.946	.3343	.021	9
52	.59965	.74991	.3335	.80003	8
53	.60019	.75037	.3327	.79986	7
54	.042	.082	.3319	.968	6
55	.60065	.75128	1.3311	.79951	5
56	.089	.173	.3303	.934	4
57	.112	.219	.3295	.916	3
58	.135	.264	.3287	.899	2
59	.158	.310	.3278	.881	1
60	.60182	.75355	1.3270	.79864	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.60182	.75355	1.3270	.79864	60
1	.205	.401	.3262	.846	59
2	.228	.447	.3254	.829	58
3	.251	.492	.3246	.811	57
4	.274	.538	.3238	.793	56
5	.60298	.75584	1.3230	.79776	55
6	.321	.629	.3222	.758	54
7	.344	.675	.3214	.741	53
8	.367	.721	.3206	.723	52
9	.390	.767	.3198	.706	51
10	.60414	.75812	1.3190	.79688	50
11	.437	.858	.3182	.671	49
12	.460	.904	.3175	.653	48
13	.483	.950	.3167	.635	47
14	.506	.75996	.3159	.618	46
15	.60529	.76042	1.3151	.79600	45
16	.553	.088	.3143	.583	44
17	.576	.134	.3135	.565	43
18	.599	.180	.3127	.547	42
19	.622	.226	.3119	.530	41
20	.60645	.76272	1.3111	.79512	40
21	.668	.318	.3103	.494	39
22	.691	.364	.3095	.477	38
23	.714	.410	.3087	.459	37
24	.738	.456	.3079	.441	36
25	.60761	.76502	1.3072	.79424	35
26	.784	.548	.3064	.406	34
27	.807	.594	.3056	.388	33
28	.830	.640	.3048	.371	32
29	.853	.686	.3040	.353	31
30	.60876	.76733	1.3032	.79335	30
31	.899	.779	.3024	.318	29
32	.922	.825	.3017	.300	28
33	.945	.871	.3009	.282	27
34	.968	.918	.3001	.264	26
35	.60991	.76964	1.2993	.79247	25
36	.61015	.77010	.2985	.229	24
37	.038	.057	.2977	.211	23
38	.061	.103	.2970	.193	22
39	.084	.149	.2962	.176	21
40	.61107	.77196	1.2954	.79158	20
41	.130	.242	.2946	.140	19
42	.153	.289	.2938	.122	18
43	.176	.335	.2931	.105	17
44	.199	.382	.2923	.087	16
45	.61222	.77428	1.2915	.79069	15
46	.245	.475	.2907	.051	14
47	.268	.521	.2900	.033	13
48	.291	.568	.2892	.79016	12
49	.314	.615	.2884	.78998	11
50	.61337	.77661	1.2876	.78980	10
51	.360	.708	.2869	.962	9
52	.383	.754	.2861	.944	8
53	.406	.801	.2853	.926	7
54	.429	.848	.2846	.908	6
55	.61451	.77895	1.2838	.78891	5
56	.474	.941	.2830	.873	4
57	.497	.77988	.2822	.855	3
58	.520	.78035	.2815	.837	2
59	.543	.082	.2807	.819	1
60	.61566	.78129	1.2799	.78801	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.61566	.78129	1.2799	.78801	60
1	589	175	.2792	783	59
2	612	222	.2784	765	58
3	635	269	.2776	747	57
4	658	316	.2769	729	56
5	.61681	.78363	1.2761	.78711	55
6	704	410	.2753	694	54
7	726	457	.2746	676	53
8	749	504	.2738	658	52
9	772	551	.2731	640	51
10	.61795	.78598	1.2723	.78622	50
11	818	645	.2715	604	49
12	841	692	.2708	586	48
13	864	739	.2700	568	47
14	887	786	.2693	550	46
15	.61909	.78834	1.2685	.78532	45
16	932	881	.2677	514	44
17	955	928	.2670	496	43
18	.61978	.78975	.2662	478	42
19	.62091	.79022	.2655	460	41
20	.62024	.79070	1.2647	.78442	40
21	046	117	.2640	424	39
22	069	164	.2632	405	38
23	092	212	.2624	387	37
24	115	259	.2617	369	36
25	.62138	.79306	1.2609	.78351	35
26	160	354	.2602	333	34
27	183	401	.2594	315	33
28	206	449	.2587	297	32
29	229	496	.2579	279	31
30	.62251	.79544	1.2572	.78261	30
31	274	591	.2564	243	29
32	297	639	.2557	225	28
33	320	686	.2549	206	27
34	342	734	.2542	188	26
35	.62365	.79781	1.2534	.78170	25
36	388	829	.2527	152	24
37	411	877	.2519	134	23
38	433	924	.2512	116	22
39	456	.79972	.2504	098	21
40	.62479	.80020	1.2497	.78079	20
41	502	067	.2489	061	19
42	524	115	.2482	043	18
43	547	163	.2475	025	17
44	570	211	.2467	.78007	16
45	.62592	.80258	1.2460	.77988	15
46	615	306	.2452	970	14
47	638	354	.2445	952	13
48	660	402	.2437	934	12
49	683	450	.2430	916	11
50	.62706	.80498	1.2423	.77897	10
51	728	546	.2415	879	9
52	751	594	.2408	861	8
53	774	642	.2401	843	7
54	796	690	.2393	824	6
55	.62819	.80738	1.2386	.77806	5
56	842	786	.2378	788	4
57	864	834	.2371	769	3
58	887	882	.2364	751	2
59	909	930	.2356	733	1
60	.62932	.80978	1.2349	.77715	0
	Cos	Ctn	Tan	Sin	'

51°

'	Sin	Tan	Ctn	Cos	'
0	.62932	.80978	1.2349	.77715	60
1	955	.81027	.2342	696	59
2	.62977	075	.2334	678	58
3	.63000	123	.2327	660	57
4	022	171	.2320	641	56
5	.63045	.81220	1.2312	.77623	55
6	068	268	.2305	605	54
7	090	316	.2298	586	53
8	113	364	.2290	568	52
9	135	413	.2283	550	51
10	.63158	.81461	1.2276	.77531	50
11	180	510	.2268	513	49
12	203	558	.2261	494	48
13	225	606	.2254	476	47
14	248	655	.2247	458	46
15	.63271	.81703	1.2239	.77439	45
16	293	752	.2232	421	44
17	316	800	.2225	402	43
18	338	849	.2218	384	42
19	361	898	.2210	366	41
20	.63383	.81946	1.2203	.77347	40
21	406	.81995	.2196	329	39
22	428	.82044	.2189	310	38
23	451	092	.2181	292	37
24	473	141	.2174	273	36
25	.63496	.82190	1.2167	.77255	35
26	518	238	.2160	256	34
27	540	287	.2153	218	33
28	563	336	.2145	199	32
29	585	385	.2138	181	31
30	.63608	.82434	1.2131	.77162	30
31	630	483	.2124	144	29
32	653	531	.2117	125	28
33	675	580	.2109	107	27
34	698	629	.2102	088	26
35	.63720	.82678	1.2095	.77070	25
36	742	727	.2088	051	24
37	765	776	.2081	033	23
38	787	825	.2074	.77014	22
39	810	874	.2066	.76996	21
40	.63832	.82923	1.2059	.76977	20
41	854	.82972	.2052	959	19
42	877	.83022	.2045	910	18
43	899	071	.2038	921	17
44	922	120	.2031	903	16
45	.63944	.83169	1.2024	.76884	15
46	966	218	.2017	866	14
47	.63989	268	.2009	847	13
48	.64011	317	.2002	828	12
49	033	366	.1995	810	11
50	.64056	.83415	1.1988	.76791	10
51	078	465	.1981	772	9
52	100	514	.1974	754	8
53	123	564	.1967	735	7
54	145	613	.1960	717	6
55	.64167	.83662	1.1953	.76698	5
56	190	712	.1946	679	4
57	212	761	.1939	661	3
58	234	811	.1932	642	2
59	256	860	.1925	623	1
60	.64279	.83910	1.1918	.76604	0
	Cos	Ctn	Tan	Sin	'

50°

'	Sin	Tan	Ctn	Cos	'
0	.64279	.83910	1.1918	.76604	60
1	301	.83960	.1910	586	59
2	323	.84009	.1903	567	58
3	346	.84059	.1896	548	57
4	368	.84108	.1889	530	56
5	.84158	.84158	1.1882	.76511	55
6	412	.208	.1875	492	54
7	435	.258	.1868	473	53
8	457	.307	.1861	455	52
9	479	.357	.1854	436	51
10	.84501	.84501	1.1847	.76417	50
11	524	.457	.1840	398	49
12	546	.507	.1833	380	48
13	568	.556	.1826	361	47
14	590	.606	.1819	342	46
15	.84612	.84612	1.1812	.76323	45
16	635	.706	.1806	304	44
17	657	.756	.1799	286	43
18	679	.806	.1792	267	42
19	701	.856	.1785	248	41
20	.84723	.84723	1.1778	.76229	40
21	716	.81563	.1771	210	39
22	768	.85006	.1764	192	38
23	790	.897	.1757	173	37
24	812	.107	.1750	154	36
25	.84834	.85177	1.1743	.76135	35
26	856	.207	.1736	116	34
27	878	.257	.1729	097	33
28	901	.308	.1722	078	32
29	923	.358	.1715	059	31
30	.84945	.85498	1.1708	.76041	30
31	967	.458	.1702	022	29
32	.84989	.8509	.1695	.76003	28
33	.85011	.859	.1688	.75984	27
34	033	.609	.1681	965	26
35	.85055	.85559	1.1674	.75946	25
36	077	.710	.1667	927	24
37	100	.761	.1660	908	23
38	122	.811	.1653	889	22
39	144	.862	.1647	870	21
40	.85166	.85912	1.1640	.75851	20
41	188	.85963	.1633	832	19
42	210	.86014	.1626	813	18
43	232	.064	.1619	794	17
44	254	.115	.1612	775	16
45	.85273	.86166	1.1606	.75756	15
46	288	.215	.1599	738	14
47	320	.267	.1592	719	13
48	342	.318	.1585	700	12
49	364	.368	.1578	680	11
50	.85386	.86119	1.1571	.75661	10
51	408	.470	.1565	642	9
52	430	.521	.1558	623	8
53	452	.572	.1551	604	7
54	474	.623	.1544	585	6
55	.85496	.86071	1.1538	.75563	5
56	518	.725	.1531	547	4
57	540	.776	.1524	528	3
58	562	.827	.1517	509	2
59	584	.878	.1510	490	1
60	.85606	.86029	1.1504	.75471	0
	Cos	Ctn	Tan	Sin	'

'	Sin	Tan	Ctn	Cos	'
0	.65606	.86929	1.1504	.75471	60
1	628	.86980	.1497	452	59
2	650	.87031	.1490	433	58
3	672	.87082	.1483	414	57
4	694	.133	.1477	395	56
5	.85716	.87184	1.1470	.75375	55
6	738	.236	.1463	356	54
7	759	.287	.1456	337	53
8	781	.338	.1450	318	52
9	803	.389	.1443	299	51
10	.85825	.87441	1.1436	.75280	50
11	847	.492	.1430	261	49
12	869	.543	.1423	241	48
13	891	.595	.1416	222	47
14	913	.646	.1410	203	46
15	.85935	.87698	1.1403	.75184	45
16	956	.749	.1396	165	44
17	.85978	.801	.1389	146	43
18	.86000	.852	.1383	126	42
19	022	.904	.1376	107	41
20	.86044	.87955	1.1369	.75088	40
21	066	.88007	.1363	069	39
22	088	.059	.1356	050	38
23	109	.110	.1349	030	37
24	131	.162	.1343	.75011	36
25	.86153	.88214	1.1336	.74992	35
26	175	.265	.1329	973	34
27	197	.317	.1323	953	33
28	218	.369	.1316	934	32
29	240	.421	.1310	915	31
30	.86262	.88473	1.1303	.74896	30
31	284	.524	.1296	876	29
32	.306	.576	.1290	857	28
33	.327	.628	.1283	838	27
34	.349	.680	.1276	818	26
35	.86371	.88732	1.1270	.74799	25
36	.393	.784	.1263	780	24
37	.414	.836	.1257	760	23
38	.436	.888	.1250	741	22
39	.458	.940	.1243	722	21
40	.86480	.88992	1.1237	.74703	20
41	.501	.89045	.1230	683	19
42	.523	.097	.1224	664	18
43	.545	.149	.1217	644	17
44	.566	.201	.1211	625	16
45	.86588	.89253	1.1204	.74606	15
46	.610	.306	.1197	586	14
47	.632	.358	.1191	567	13
48	.653	.410	.1184	548	12
49	.675	.463	.1178	528	11
50	.86697	.89515	1.1171	.74509	10
51	.718	.567	.1165	489	9
52	.740	.620	.1158	470	8
53	.762	.672	.1152	451	7
54	.783	.725	.1145	431	6
55	.86805	.89777	1.1139	.74412	5
56	.827	.830	.1132	392	4
57	.848	.883	.1126	373	3
58	.870	.935	.1119	353	2
59	.891	.89988	.1113	334	1
60	.86913	.90040	1.1106	.74314	0
	Cos	Ctn	Tan	Sin	'

	Sin	Tan	Ctn	Cos	
0	.66913	.90040	1.1106	.74314	60
1	.935	.093	.1100	.295	59
2	.956	.146	.1093	.276	58
3	.978	.199	.1087	.256	57
4	.66999	.251	.1080	.237	56
5	.67021	.90304	1.1074	.74217	55
6	.043	.357	.1067	.198	54
7	.061	.410	.1061	.178	53
8	.086	.463	.1054	.159	52
9	.107	.516	.1048	.139	51
10	.67129	.90569	1.1041	.74120	50
11	.151	.621	.1035	.100	49
12	.172	.674	.1028	.080	48
13	.194	.727	.1022	.061	47
14	.215	.781	.1016	.041	46
15	.67237	.90834	1.1009	.74022	45
16	.258	.887	.1003	.002	44
17	.280	.910	.0996	.083	43
18	.301	.90993	.0990	.063	42
19	.323	.91046	.0983	.044	41
20	.67344	.91089	1.0977	.73924	40
21	.365	.153	.0971	.004	39
22	.387	.206	.0964	.885	38
23	.409	.259	.0958	.865	37
24	.430	.313	.0951	.846	36
25	.67452	.91306	1.0945	.73826	35
26	.473	.419	.0939	.806	34
27	.495	.473	.0932	.787	33
28	.516	.526	.0926	.767	32
29	.538	.580	.0919	.747	31
30	.67559	.91633	1.0913	.73728	30
31	.580	.687	.0907	.708	29
32	.602	.740	.0900	.688	28
33	.623	.794	.0894	.669	27
34	.645	.847	.0888	.649	26
35	.67666	.91901	1.0881	.73629	25
36	.688	.91555	.0875	.620	24
37	.709	.92008	.0869	.590	23
38	.730	.062	.0862	.570	22
39	.752	.116	.0856	.551	21
40	.67773	.92170	1.0850	.73531	20
41	.795	.224	.0843	.511	19
42	.816	.277	.0837	.491	18
43	.837	.331	.0831	.472	17
44	.859	.385	.0824	.452	16
45	.67880	.92439	1.0818	.73432	15
46	.901	.493	.0812	.433	14
47	.923	.547	.0805	.413	13
48	.944	.601	.0799	.393	12
49	.965	.655	.0793	.373	11
50	.67987	.92709	1.0786	.73333	10
51	.68008	.763	.0780	.311	9
52	.029	.817	.0774	.291	8
53	.051	.872	.0768	.271	7
54	.072	.926	.0761	.251	6
55	.68093	.92980	1.0755	.73234	5
56	.115	.90034	.0749	.215	4
57	.136	.088	.0742	.195	3
58	.157	.143	.0736	.175	2
59	.179	.197	.0730	.155	1
60	.68200	.93252	1.0724	.73135	0
	Cos	Ctn	Tan	Sin	

	Sin	Tan	Ctn	Cos	
0	.68200	.93252	1.0724	.73135	60
1	.221	.306	.0717	.116	59
2	.242	.360	.0711	.096	58
3	.264	.415	.0705	.076	57
4	.285	.469	.0699	.056	56
5	.68306	.93524	1.0692	.73036	55
6	.327	.578	.0686	.036	54
7	.349	.633	.0680	.016	53
8	.370	.688	.0674	.976	52
9	.391	.742	.0668	.957	51
10	.68412	.93797	1.0661	.72937	50
11	.434	.852	.0655	.917	49
12	.455	.906	.0649	.897	48
13	.476	.93961	.0643	.877	47
14	.497	.94016	.0637	.857	46
15	.68518	.94071	1.0630	.72837	45
16	.539	.125	.0624	.817	44
17	.561	.180	.0618	.797	43
18	.582	.235	.0612	.777	42
19	.603	.290	.0606	.757	41
20	.68624	.94345	1.0599	.72737	40
21	.645	.400	.0593	.717	39
22	.666	.455	.0587	.697	38
23	.688	.510	.0581	.677	37
24	.709	.565	.0575	.657	36
25	.68730	.94620	1.0569	.72637	35
26	.751	.676	.0562	.617	34
27	.772	.731	.0556	.597	33
28	.793	.786	.0550	.577	32
29	.814	.841	.0544	.557	31
30	.68835	.94896	1.0538	.72537	30
31	.857	.9112	.0532	.517	29
32	.878	.95007	.0526	.497	28
33	.899	.062	.0519	.477	27
34	.920	.118	.0513	.457	26
35	.68941	.95173	1.0507	.72437	25
36	.962	.229	.0501	.417	24
37	.983	.281	.0495	.397	23
38	.69046	.95448	1.0491	.72337	22
39	.025	.335	.0485	.377	21
40	.69046	.95451	1.0477	.72237	20
41	.067	.506	.0470	.357	19
42	.088	.562	.0464	.337	18
43	.109	.618	.0458	.317	17
44	.130	.673	.0452	.297	16
45	.69151	.95729	1.0446	.72137	15
46	.172	.785	.0440	.276	14
47	.193	.841	.0434	.256	13
48	.214	.897	.0428	.236	12
49	.235	.95952	.0422	.216	11
50	.69256	.96008	1.0416	.72037	10
51	.277	.064	.0410	.196	9
52	.298	.120	.0404	.176	8
53	.319	.176	.0398	.156	7
54	.340	.232	.0392	.136	6
55	.69361	.96288	1.0385	.71937	5
56	.382	.344	.0379	.116	4
57	.403	.400	.0373	.096	3
58	.424	.457	.0367	.076	2
59	.445	.513	.0361	.056	1
60	.69466	.96569	1.0355	.71837	0
	Cos	Ctn	Tan	Sin	

<i>i</i>	Sin	Tan	Ctn	Cos	
0	.69466	.96569	1.0355	.71934	60
1	487	625	.0349	914	59
2	508	681	.0343	894	58
3	529	738	.0337	873	57
4	549	794	.0331	853	56
5	.69570	.96850	1.0325	.71833	55
6	591	907	.0319	813	54
7	612	.96963	.0313	792	53
8	633	.97020	.0307	772	52
9	654	076	.0301	752	51
10	.69675	.97133	1.0295	.71732	50
11	696	189	.0289	711	49
12	717	246	.0283	691	48
13	737	302	.0277	671	47
14	758	359	.0271	650	46
15	.69779	.97416	1.0265	.71630	45
16	800	472	.0259	610	44
17	821	529	.0253	590	43
18	842	586	.0247	569	42
19	862	643	.0241	549	41
20	.69883	.97700	1.0235	.71529	40
21	904	756	.0230	508	39
22	925	813	.0224	488	38
23	946	870	.0218	468	37
24	966	927	.0212	447	36
25	.69987	.97984	1.0206	.71427	35
26	.70008	.98041	.0200	407	34
27	029	098	.0194	386	33
28	049	155	.0188	366	32
29	070	213	.0182	345	31
30	.70091	.98270	1.0176	.71325	30
31	112	327	.0170	305	29
32	132	384	.0164	284	28
33	153	441	.0158	264	27
34	174	499	.0152	243	26
35	.70195	.98556	1.0147	.71223	25
36	215	613	.0141	203	24
37	236	671	.0135	182	23
38	257	728	.0129	162	22
39	277	786	.0123	141	21
40	.70298	.98843	1.0117	.71121	20
41	319	901	.0111	100	19
42	339	.98958	.0105	080	18
43	360	.99016	.0099	059	17
44	381	073	.0094	039	16
45	.70401	.99131	1.0088	.71019	15
46	422	189	.0082	.70998	14
47	443	247	.0076	978	13
48	463	304	.0070	957	12
49	484	362	.0064	937	11
50	.70505	.99420	1.0058	.70916	10
51	525	478	.0052	896	9
52	546	536	.0047	875	8
53	567	594	.0041	855	7
54	587	652	.0035	834	6
55	.70608	.99710	1.0029	.70813	5
56	628	768	.0023	793	4
57	649	826	.0017	772	3
58	670	884	.0012	752	2
59	690	.99942	.0006	731	1
60	.70711	1.0000	1.0000	.70711	0
	Cos	Ctn	Tan	Sin	<i>i</i>

TABLE III

COMMON LOGARITHMS

OF THE

TRIGONOMETRIC FUNCTIONS

FROM

0° TO 90° AT INTERVALS OF ONE MINUTE

TO

FIVE DECIMAL PLACES

TABLE IIIa—AUXILIARY TABLE OF S AND T FOR A IN MINUTES

$S = \log \sin A - \log A'$ and $T = \log \tan A - \log A'$

A'	$S + 10$
0' — 13'	6.46373
14' — 42'	72
43' — 58'	71
59' — 71'	6.46370
72' — 81'	69
82' — 91'	68
92' — 99'	6.46367
100' — 107'	66
108' — 115'	65
116' — 121'	6.46364
122' — 128'	63
129' — 134'	62
135' — 140'	6.46361
141' — 146'	60
147' — 151'	59
152' — 157'	6.46358
158' — 162'	57
163' — 167'	56
168' — 171'	6.46355
172' — 176'	54
177' — 181'	53

A'	$T + 10$
0' — 26'	6.46373
27' — 39'	74
40' — 48'	75
49' — 56'	6.46376
57' — 63'	77
64' — 69'	78
70' — 74'	6.46379
75' — 80'	80
81' — 85'	81
86' — 89'	6.46382
90' — 94'	83
95' — 98'	84
99' — 102'	6.46385
103' — 106'	86
107' — 110'	87
111' — 113'	6.46388
114' — 117'	89
118' — 120'	90
121' — 124'	6.46391
125' — 127'	92
128' — 130'	93

A'	$T + 10$
131' — 133'	6.46394
134' — 136'	95
137' — 139'	96
140' — 142'	6.46397
143' — 145'	98
146' — 148'	99
149' — 150'	6.46400
151' — 153'	01
154' — 156'	02
157' — 158'	6.46403
159' — 161'	04
162' — 163'	05
164' — 166'	6.46406
167' — 168'	07
169' — 171'	08
172' — 173'	6.46409
174' — 175'	10
176' — 178'	11
179' — 180'	6.46412
181' — 182'	13
183' — 184'	11

For small angles: $\log \sin A = \log A' + S$ and $\log \tan A = \log A' + T$
For angles near 90°: $\log \cos A = \log (90' - A)' + S$, $\log \cot A = \log (90' - A)' + T$
where A' = number of minutes in A , and $(90' - A)'$ = number of minutes in $90^\circ - A$

$\angle$	L Sin	d	L Tan	c d	L Ctn	L Cos	
0	—	—	—	—	—	0.00 000	66
1	6.46 373	30103	6.46 373	30103	3.53 627	0.00 000	59
2	6.76 476	17609	6.76 476	17609	3.23 524	0.00 000	58
3	6.94 085	12194	6.94 085	12194	3.05 915	0.00 000	57
4	7.06 579	9691	7.06 579	9691	2.93 421	0.00 000	56
5	7.16 270	7918	7.16 270	7918	2.83 730	0.00 000	55
6	7.24 188	6694	7.24 188	6694	2.75 812	0.00 000	54
7	7.30 882	5830	7.30 882	5830	2.69 118	0.00 000	53
8	7.36 682	5115	7.36 682	5115	2.63 318	0.00 000	52
9	7.41 797	4576	7.41 797	4576	2.58 203	0.00 000	51
10	7.46 373	4139	7.46 373	4139	2.53 627	0.00 000	50
11	7.50 512	3779	7.50 512	3779	2.49 488	0.00 000	49
12	7.54 291	3476	7.54 291	3476	2.45 709	0.00 000	48
13	7.57 767	3218	7.57 767	3218	2.42 233	0.00 000	47
14	7.60 985	2997	7.60 985	2997	2.39 014	0.00 000	46
15	7.63 982	2802	7.63 982	2802	2.36 018	0.00 000	45
16	7.66 784	2633	7.66 785	2633	2.33 215	0.00 000	44
17	7.69 417	2483	7.69 418	2482	2.30 582	9.99 999	43
18	7.71 900	2348	7.71 900	2348	2.28 100	9.99 999	42
19	7.74 248	2227	7.74 248	2228	2.25 752	9.99 999	41
20	7.76 475	2119	7.76 476	2119	2.23 521	9.99 999	40
21	7.78 594	2021	7.78 595	2020	2.21 405	9.99 999	39
22	7.80 615	1930	7.80 615	1931	2.19 385	9.99 999	38
23	7.82 545	1848	7.82 546	1848	2.17 454	9.99 999	37
24	7.84 393	1773	7.84 394	1773	2.15 606	9.99 999	36
25	7.86 166	1704	7.86 167	1704	2.13 833	9.99 999	35
26	7.87 870	1639	7.87 871	1639	2.12 129	9.99 999	34
27	7.89 509	1579	7.89 510	1579	2.10 487	9.99 999	33
28	7.91 088	1524	7.91 089	1524	2.08 911	9.99 999	32
29	7.92 612	1472	7.92 613	1472	2.07 387	9.99 998	31
30	7.94 084	1424	7.94 086	1424	2.05 914	9.99 998	30
31	7.95 508	1379	7.95 510	1379	2.04 490	9.99 998	29
32	7.96 887	1336	7.96 889	1336	2.03 111	9.99 998	28
33	7.98 223	1297	7.98 225	1297	2.01 775	9.99 998	27
34	7.99 520	1259	7.99 522	1259	2.00 478	9.99 998	26
35	8.00 779	1223	8.00 781	1223	1.99 219	9.99 998	25
36	8.02 002	1190	8.02 004	1190	1.97 996	9.99 998	24
37	8.03 192	1158	8.03 194	1158	1.96 806	9.99 997	23
38	8.04 350	1128	8.04 353	1128	1.95 647	9.99 997	22
39	8.05 478	1100	8.05 481	1100	1.94 519	9.99 997	21
40	8.06 578	1072	8.06 581	1072	1.93 419	9.99 997	20
41	8.07 650	1046	8.07 653	1047	1.92 347	9.99 997	19
42	8.08 696	1022	8.08 700	1022	1.91 300	9.99 997	18
43	8.09 718	999	8.09 722	998	1.90 278	9.99 997	17
44	8.10 717	976	8.10 720	976	1.89 280	9.99 996	16
45	8.11 693	954	8.11 696	953	1.88 304	9.99 996	15
46	8.12 647	934	8.12 651	934	1.87 349	9.99 996	14
47	8.13 581	914	8.13 585	915	1.86 415	9.99 996	13
48	8.14 495	896	8.14 500	896	1.85 500	9.99 996	12
49	8.15 391	877	8.15 395	878	1.84 605	9.99 996	11
50	8.16 268	860	8.16 273	861	1.83 727	9.99 995	10
51	8.17 128	843	8.17 133	843	1.82 867	9.99 995	9
52	8.17 971	827	8.17 976	828	1.82 024	9.99 995	8
53	8.18 798	812	8.18 804	812	1.81 196	9.99 995	7
54	8.19 610	797	8.19 616	797	1.80 384	9.99 995	6
55	8.20 407	782	8.20 413	782	1.79 587	9.99 994	5
56	8.21 189	768	8.21 195	768	1.78 805	9.99 994	4
57	8.21 958	754	8.21 964	754	1.78 036	9.99 994	3
58	8.22 713	741	8.22 720	742	1.77 280	9.99 994	2
59	8.23 456	728	8.23 462	728	1.76 538	9.99 994	1
60	8.24 186	—	8.24 192	—	1.75 808	9.99 993	0
	L Cos	d	L Ctn	c d	L Tan	L Sin	

For logarithms of sines or tangents of angles less than 3° (or logarithms of cosines or cotangents of angles greater than 87°), see Table IIIa, p. 45.

When the tabular differences are large, that method is usually better. The proportional parts stated for 1° and 2° in this table are sufficient when great accuracy is not required, even if the ordinary method of interpolation is used.

°	L Sin		d	L Tan		cd	L Ctn	L Cos	°	Prop. Pts.				
0	8.24 186		717	8.24 192		718	1.75 808	9.99 993	60					
1	8.24 003		706	8.24 010		707	1.75 000	9.99 993	59					
2	8.25 609		695	8.25 616		696	1.74 884	9.99 993	58					
3	8.26 304		684	8.26 312		684	1.73 688	9.99 993	57					
4	8.26 988		673	8.26 996		673	1.73 004	9.99 992	56					
5	8.27 661		663	8.27 669		663	1.72 331	9.99 992	55					
6	8.28 324		653	8.28 332		654	1.71 668	9.99 992	54					
7	8.28 977		643	8.28 985		643	1.71 014	9.99 992	53					
8	8.29 621		634	8.29 629		634	1.70 371	9.99 992	52					
9	8.30 255		624	8.30 263		625	1.69 737	9.99 991	51					
10	8.30 879		616	8.30 888		617	1.69 112	9.99 991	50					
11	8.31 495		608	8.31 505		607	1.68 495	9.99 991	49					
12	8.32 103		599	8.32 112		599	1.67 888	9.99 990	48					
13	8.32 702		590	8.32 711		591	1.67 289	9.99 990	47					
14	8.33 292		583	8.33 302		584	1.66 698	9.99 990	46					
15	8.33 875		575	8.33 886		575	1.66 114	9.99 990	45					
16	8.34 450		568	8.34 461		568	1.65 530	9.99 989	44					
17	8.35 018		560	8.35 029		561	1.64 951	9.99 989	43					
18	8.35 578		553	8.35 590		553	1.64 410	9.99 989	42					
19	8.36 131		547	8.36 143		547	1.63 857	9.99 989	41					
20	8.36 678		539	8.36 689		540	1.63 311	9.99 988	40					
21	8.37 217		533	8.37 229		533	1.62 771	9.99 988	39					
22	8.37 750		526	8.37 762		527	1.62 238	9.99 988	38					
23	8.38 276		520	8.38 289		520	1.61 711	9.99 987	37					
24	8.38 796		514	8.38 809		514	1.61 191	9.99 987	36					
25	8.39 310		508	8.39 323		509	1.60 677	9.99 987	35					
26	8.39 818		502	8.39 832		502	1.60 168	9.99 986	34					
27	8.40 320		496	8.40 334		496	1.59 666	9.99 986	33					
28	8.40 816		491	8.40 830		491	1.59 170	9.99 986	32					
29	8.41 307		485	8.41 321		486	1.58 679	9.99 985	31					
30	8.41 792		480	8.41 807		480	1.58 193	9.99 985	30					
31	8.42 272		474	8.42 287		475	1.57 713	9.99 985	29					
32	8.42 746		470	8.42 762		470	1.57 238	9.99 984	28					
33	8.43 216		465	8.43 232		465	1.56 768	9.99 984	27					
34	8.43 680		460	8.43 696		460	1.56 304	9.99 984	26					
35	8.44 139		455	8.44 156		455	1.55 844	9.99 983	25					
36	8.44 594		450	8.44 611		450	1.55 388	9.99 983	24					
37	8.45 044		445	8.45 061		446	1.54 939	9.99 983	23					
38	8.45 489		441	8.45 507		441	1.54 493	9.99 982	22					
39	8.45 930		436	8.45 948		437	1.54 052	9.99 982	21					
40	8.46 366		433	8.46 385		433	1.53 615	9.99 982	20					
41	8.46 799		427	8.46 817		428	1.53 183	9.99 981	19					
42	8.47 226		424	8.47 245		424	1.52 755	9.99 981	18					
43	8.47 650		419	8.47 669		419	1.52 331	9.99 981	17					
44	8.48 069		416	8.48 089		416	1.51 911	9.99 980	16					
45	8.48 485		411	8.48 505		412	1.51 495	9.99 980	15					
46	8.48 896		408	8.48 917		408	1.51 082	9.99 979	14					
47	8.49 304		404	8.49 325		404	1.50 675	9.99 979	13					
48	8.49 708		400	8.49 729		401	1.50 271	9.99 979	12					
49	8.50 108		396	8.50 130		397	1.49 870	9.99 978	11					
50	8.50 504		393	8.50 527		393	1.49 473	9.99 978	10					
51	8.50 897		390	8.50 920		390	1.49 080	9.99 977	9					
52	8.51 287		386	8.51 310		386	1.48 690	9.99 977	8					
53	8.51 673		382	8.51 696		383	1.48 304	9.99 977	7					
54	8.52 055		379	8.52 079		380	1.47 921	9.99 976	6					
55	8.52 434		376	8.52 459		376	1.47 541	9.99 976	5					
56	8.52 810		373	8.52 835		373	1.47 165	9.99 975	4					
57	8.53 183		369	8.53 208		370	1.46 792	9.99 975	3					
58	8.53 552		367	8.53 578		367	1.46 422	9.99 974	2					
59	8.53 919		363	8.53 945		363	1.46 055	9.99 974	1					
60	8.54 282			8.54 308			1.45 692	9.99 974	0					
°	L Cos		d	L Ctn		cd	L Tan	L Sin	°	Prop. Pts.				
0									60					
1									59					
2									58					
3									57					
4									56					
5									55					
6									54					
7									53					
8									52					
9									51					
10									50					
11									49					
12									48					
13									47					
14									46					
15									45					
16									44					
17									43					
18									42					
19									41					
20									40					
21									39					
22									38					
23									37					
24									36					
25									35					
26									34					
27									33					
28									32					
29									31					
30									30					
31									29					
32									28					
33									27					
34									26					
35									25					
36									24					
37									23					
38									22					
39									21					
40									20					
41									19					
42									18					
43									17					
44									16					
45									15					
46									14					
47									13					
48									12					
49									11					
50									10					
51									9					
52									8					
53									7					
54									6					
55									5					
56									4					
57									3					
58									2					
59									1					
60									0					

'	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.			
0	8.54 282	360	8.54 308	361	1.45 692	9.99 974	60				
1	8.54 642	357	8.51 669	358	1.45 331	9.99 973	59				
2	8.54 999	355	8.55 027	355	1.44 973	9.99 973	58				
3	8.55 354	351	8.55 382	352	1.44 618	9.99 972	57				
4	8.55 705	349	8.55 734	349	1.44 266	9.99 972	56				
5	8.56 054	346	8.56 083	346	1.43 917	9.99 971	55				
6	8.56 400	343	8.56 429	344	1.43 571	9.99 971	54				
7	8.56 743	341	8.56 773	341	1.43 227	9.99 970	53				
8	8.57 084	337	8.57 114	338	1.42 886	9.99 970	52				
9	8.57 421	336	8.57 452	336	1.42 548	9.99 969	51				
10	8.57 757	332	8.57 788	333	1.42 212	9.99 969	50				
11	8.58 089	330	8.58 121	330	1.41 879	9.99 968	49				
12	8.58 419	328	8.58 451	328	1.41 549	9.99 968	48				
13	8.58 747	325	8.58 779	326	1.41 221	9.99 967	47				
14	8.59 072	323	8.59 105	323	1.40 895	9.99 967	46				
15	8.59 395	320	8.59 428	321	1.40 572	9.99 967	45				
16	8.59 715	318	8.59 749	319	1.40 251	9.99 966	44				
17	8.60 033	316	8.60 068	316	1.39 932	9.99 966	43				
18	8.60 349	313	8.60 384	314	1.39 616	9.99 965	42				
19	8.60 662	311	8.60 698	311	1.39 302	9.99 964	41				
20	8.60 973	309	8.61 009	310	1.38 991	9.99 964	40				
21	8.61 282	307	8.61 319	307	1.38 681	9.99 963	39				
22	8.61 589	305	8.61 626	305	1.38 374	9.99 963	38				
23	8.61 894	302	8.61 931	303	1.38 069	9.99 962	37				
24	8.62 196	301	8.62 234	301	1.37 766	9.99 962	36				
25	8.62 497	298	8.62 535	299	1.37 465	9.99 961	35				
26	8.62 795	296	8.62 834	297	1.37 166	9.99 961	34				
27	8.63 091	294	8.63 131	295	1.36 869	9.99 960	33				
28	8.63 385	293	8.63 426	292	1.36 574	9.99 960	32				
29	8.63 678	290	8.63 718	291	1.36 282	9.99 959	31				
30	8.63 968	288	8.64 009	289	1.35 991	9.99 959	30				
31	8.64 256	287	8.64 298	287	1.35 702	9.99 958	29				
32	8.64 543	284	8.64 585	285	1.35 415	9.99 958	28				
33	8.64 827	283	8.64 870	284	1.35 130	9.99 957	27				
34	8.65 110	281	8.65 154	281	1.34 846	9.99 956	26				
35	8.65 391	279	8.65 435	280	1.34 565	9.99 956	25				
36	8.65 670	277	8.65 715	278	1.34 285	9.99 955	24				
37	8.65 947	276	8.65 993	276	1.34 007	9.99 955	23				
38	8.66 223	274	8.66 269	274	1.33 731	9.99 954	22				
39	8.66 497	272	8.66 543	273	1.33 457	9.99 954	21				
40	8.66 769	270	8.66 816	271	1.33 184	9.99 953	20				
41	8.67 039	269	8.67 087	269	1.32 913	9.99 952	19				
42	8.67 308	267	8.67 356	268	1.32 644	9.99 952	18				
43	8.67 575	266	8.67 624	266	1.32 376	9.99 951	17				
44	8.67 841	263	8.67 890	264	1.32 110	9.99 951	16				
45	8.68 104	263	8.68 154	263	1.31 846	9.99 950	15				
46	8.68 367	260	8.68 417	261	1.31 583	9.99 949	14				
47	8.68 627	259	8.68 678	260	1.31 322	9.99 949	13				
48	8.68 886	258	8.68 938	258	1.31 062	9.99 948	12				
49	8.69 144	256	8.69 196	257	1.30 804	9.99 948	11				
50	8.69 400	254	8.69 453	255	1.30 547	9.99 947	10				
51	8.69 654	253	8.69 708	254	1.30 292	9.99 946	9				
52	8.69 907	252	8.69 962	252	1.30 038	9.99 946	8				
53	8.70 159	250	8.70 214	251	1.29 786	9.99 945	7				
54	8.70 409	249	8.70 465	249	1.29 535	9.99 944	6				
55	8.70 658	247	8.70 714	248	1.29 286	9.99 944	5				
56	8.70 905	246	8.70 962	246	1.29 038	9.99 943	4				
57	8.71 151	244	8.71 208	245	1.28 792	9.99 942	3				
58	8.71 395	243	8.71 453	244	1.28 547	9.99 942	2				
59	8.71 638	242	8.71 697	243	1.28 303	9.99 941	1				
60	8.71 880		8.71 940		1.28 060	9.99 940	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	'	Prop. Pts.			

°	L Sin	d	L Tan	c d	L Ctn	L Cos	Prop. Pts.			
							241	239	237	235
0	8.71 880	240	8.71 940	241	1.28 060	9.99 940	60			
1	8.72 120	239	8.72 181	239	1.27 819	9.99 940	59			
2	8.72 359	238	8.72 420	239	1.27 580	9.99 939	58			
3	8.72 597	237	8.72 659	237	1.27 341	9.99 938	57			
4	8.72 834	235	8.72 896	236	1.27 104	9.99 938	56			
5	8.73 069	234	8.73 132	234	1.26 868	9.99 937	55			
6	8.73 303	232	8.73 366	234	1.26 634	9.99 936	54			
7	8.73 535	232	8.73 600	232	1.26 400	9.99 936	53			
8	8.73 767	230	8.73 832	231	1.26 168	9.99 935	52			
9	8.73 997	229	8.74 063	229	1.25 937	9.99 934	51			
10	8.74 226	228	8.74 292	229	1.25 708	9.99 934	50			
11	8.74 454	226	8.74 521	227	1.25 479	9.99 933	49			
12	8.74 680	226	8.74 748	226	1.25 252	9.99 932	48			
13	8.74 906	224	8.74 974	225	1.25 026	9.99 932	47			
14	8.75 130	223	8.75 199	224	1.24 801	9.99 931	46			
15	8.75 353	222	8.75 423	222	1.24 577	9.99 930	45			
16	8.75 575	220	8.75 645	222	1.24 355	9.99 929	44			
17	8.75 795	220	8.75 867	220	1.24 133	9.99 929	43			
18	8.76 015	219	8.76 087	219	1.23 913	9.99 928	42			
19	8.76 234	217	8.76 306	219	1.23 694	9.99 927	41			
20	8.76 451	216	8.76 525	217	1.23 475	9.99 926	40			
21	8.76 667	216	8.76 742	216	1.23 258	9.99 926	39			
22	8.76 883	214	8.76 958	215	1.23 042	9.99 925	38			
23	8.77 097	213	8.77 173	214	1.22 827	9.99 924	37			
24	8.77 310	212	8.77 387	213	1.22 613	9.99 923	36			
25	8.77 522	211	8.77 600	211	1.22 400	9.99 923	35			
26	8.77 733	210	8.77 811	211	1.22 189	9.99 922	34			
27	8.77 943	209	8.78 022	210	1.21 978	9.99 921	33			
28	8.78 152	208	8.78 232	209	1.21 768	9.99 920	32			
29	8.78 360	208	8.78 441	208	1.21 559	9.99 920	31			
30	8.78 568	206	8.78 649	206	1.21 351	9.99 919	30			
31	8.78 774	205	8.78 855	206	1.21 145	9.99 918	29			
32	8.78 979	204	8.79 061	205	1.20 939	9.99 917	28			
33	8.79 183	203	8.79 266	205	1.20 734	9.99 917	27			
34	8.79 386	202	8.79 470	203	1.20 530	9.99 916	26			
35	8.79 588	201	8.79 673	202	1.20 327	9.99 915	25			
36	8.79 789	201	8.79 875	201	1.20 125	9.99 914	24			
37	8.79 990	199	8.80 076	201	1.19 924	9.99 913	23			
38	8.80 189	199	8.80 277	199	1.19 723	9.99 913	22			
39	8.80 388	197	8.80 476	198	1.19 524	9.99 912	21			
40	8.80 585	197	8.80 674	198	1.19 326	9.99 911	20			
41	8.80 782	196	8.80 872	196	1.19 128	9.99 910	19			
42	8.80 978	195	8.81 068	196	1.18 932	9.99 909	18			
43	8.81 173	194	8.81 264	195	1.18 736	9.99 909	17			
44	8.81 367	193	8.81 459	194	1.18 541	9.99 908	16			
45	8.81 560	192	8.81 653	193	1.18 347	9.99 907	15			
46	8.81 752	192	8.81 846	192	1.18 154	9.99 906	14			
47	8.81 944	190	8.82 038	192	1.17 962	9.99 905	13			
48	8.82 134	190	8.82 230	190	1.17 770	9.99 904	12			
49	8.82 324	189	8.82 420	190	1.17 580	9.99 904	11			
50	8.82 513	188	8.82 610	189	1.17 390	9.99 903	10			
51	8.82 701	187	8.82 799	188	1.17 201	9.99 902	9			
52	8.82 888	187	8.82 987	188	1.17 013	9.99 901	8			
53	8.83 075	186	8.83 175	186	1.16 825	9.99 900	7			
54	8.83 261	185	8.83 361	186	1.16 639	9.99 899	6			
55	8.83 446	184	8.83 547	185	1.16 453	9.99 898	5			
56	8.83 630	183	8.83 732	184	1.16 268	9.99 898	4			
57	8.83 813	183	8.83 916	184	1.16 084	9.99 897	3			
58	8.83 996	181	8.84 100	182	1.15 900	9.99 896	2			
59	8.84 177	181	8.84 282	182	1.15 718	9.99 895	1			
60	8.84 358		8.84 464		1.15 536	9.99 894	0			
/	L Cos	d	L Ctn	c d	L Tan	L Sin	Prop. Pts.			
							241	239	237	235
2							48.2	47.8	47.4	47.0
3							72.3	71.7	71.1	70.5
4							96.4	95.6	94.8	94.0
5							120.5	119.5	118.5	117.5
6							144.6	143.4	142.2	141.0
7							168.7	167.3	165.9	164.5
8							192.8	191.2	189.6	188.0
9							216.9	215.1	213.3	211.5
2							234	232	229	227
3							46.8	46.4	45.8	45.4
4							70.2	69.6	68.7	68.1
5							93.6	92.8	91.6	90.8
6							117.0	116.0	114.5	113.5
7							140.4	139.2	137.4	136.2
8							163.8	162.4	160.3	158.9
9							187.2	185.6	183.2	181.6
2							210.6	208.8	206.1	204.3
2							226	224	222	220
3							45.2	44.8	44.4	44.0
4							67.8	67.2	66.6	66.0
5							90.4	89.6	88.8	88.0
6							113.0	112.0	111.0	110.0
7							135.6	134.4	133.2	132.0
8							158.2	156.8	155.4	154.0
9							180.8	179.2	177.6	176.0
2							203.4	201.6	199.8	198.0
2							219	217	215	213
3							43.8	43.4	43.0	42.6
4							65.7	65.1	64.5	63.9
5							87.6	86.8	86.0	85.2
6							109.5	108.5	107.5	106.5
7							131.4	130.2	129.0	127.8
8							153.3	151.9	150.5	149.1
9							175.2	173.6	172.0	170.4
2							197.1	195.3	193.5	191.7
2							211	208	206	203
3							42.2	41.6	41.2	40.6
4							63.3	62.4	61.8	60.9
5							84.4	83.2	82.1	81.2
6							105.5	104.0	103.0	101.5
7							126.6	124.8	123.6	121.8
8							147.7	145.6	144.2	142.1
9							168.8	166.4	164.8	162.4
2							189.9	187.2	185.4	182.7
2							201	199	197	195
3							40.2	39.8	39.1	38.9
4							60.3	59.7	59.1	58.5
5							80.4	79.6	78.8	78.0
6							100.5	99.5	98.5	97.5
7							120.6	119.4	118.2	117.0
8							140.7	139.3	137.9	136.5
9							160.8	159.2	157.6	156.0
2							180.9	179.1	177.3	175.5
2							193	192	190	188
3							38.6	38.4	38.0	37.6
4							57.9	57.6	57.0	56.4
5							77.2	76.8	76.0	75.2
6							96.5	96.0	95.0	94.0
7							115.8	115.2	114.0	112.8
8							135.1	134.4	133.0	131.6
9							154.4	153.6	152.0	150.4
2							173.7	172.8	171.0	169.2
2							186	184	182	181
3							37.2	36.8	36.4	36.2
4							55.8	55.2	54.6	54.3
5							74.4	73.6	72.8	72.4
6							93.0	92.0	91.0	90.5
7							111.6	110.4	109.2	108.6
8							130.2	128.8	127.4	126.7
9							148.8	147.2	145.6	144.8
2							167.4	165.6	163.8	162.9

'	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.			
0	8.84358		8.84464		1.15536	9.99894	60				
1	8.84539	181	8.84646	182	1.15551	9.99893	59	181	181	180	179
2	8.84718	179	8.84826	180	1.15574	9.99892	58	364	362	360	358
3	8.84897	178	8.85006	180	1.15594	9.99891	57	547	544	540	537
4	8.85075	178	8.85185	179	1.15615	9.99891	56	730	727	720	716
5	8.85252	177	8.85363	178	1.15637	9.99890	55	913	909	900	895
6	8.85429	177	8.85540	177	1.15660	9.99889	54	1092	1086	1080	1074
7	8.85605	176	8.85717	177	1.15683	9.99888	53	1271	1264	1260	1253
8	8.85780	175	8.85893	176	1.15707	9.99887	52	1450	1443	1440	1432
9	8.85955	175	8.86069	176	1.15731	9.99886	51	1628	1620	1620	1611
10	8.86128	174	8.86243	174	1.15755	9.99885	50	1807	1798	1798	1788
11	8.86301	173	8.86417	174	1.15780	9.99884	49	2000	1989	1989	1978
12	8.86474	173	8.86591	174	1.15804	9.99883	48	2193	2181	2181	2169
13	8.86645	171	8.86763	172	1.15829	9.99882	47	2396	2383	2383	2370
14	8.86816	171	8.86935	172	1.15854	9.99881	46	2600	2586	2586	2572
15	8.86987	171	8.87106	171	1.15879	9.99880	45	2804	2789	2789	2774
16	8.87156	169	8.87277	171	1.15904	9.99879	44	3008	2992	2992	2976
17	8.87325	169	8.87447	170	1.15929	9.99878	43	3212	3195	3195	3178
18	8.87494	169	8.87616	169	1.15954	9.99877	42	3416	3398	3398	3380
19	8.87661	168	8.87787	168	1.15979	9.99876	41	3620	3599	3599	3580
20	8.87829	168	8.87958	168	1.16004	9.99875	40	3824	3799	3799	3779
21	8.87995	166	8.88127	167	1.16029	9.99874	39	4028	4000	4000	3979
22	8.88161	166	8.88295	166	1.16054	9.99873	38	4232	4200	4200	4178
23	8.88326	165	8.88463	166	1.16079	9.99872	37	4436	4400	4400	4377
24	8.88490	164	8.88628	165	1.16104	9.99871	36	4640	4600	4600	4576
25	8.88654	163	8.88793	165	1.16129	9.99870	35	4844	4800	4800	4774
26	8.88817	163	8.88958	163	1.16154	9.99869	34	5048	5000	5000	4973
27	8.88980	162	8.89121	163	1.16179	9.99868	33	5252	5200	5200	5172
28	8.89142	162	8.89284	163	1.16204	9.99867	32	5456	5400	5400	5371
29	8.89304	160	8.89447	161	1.16229	9.99866	31	5660	5600	5600	5569
30	8.89464	161	8.89608	162	1.16254	9.99865	30	5864	5800	5800	5768
31	8.89625	159	8.89769	160	1.16279	9.99864	29	6068	6000	6000	5966
32	8.89784	159	8.89929	160	1.16304	9.99863	28	6272	6200	6200	6166
33	8.89943	159	8.90088	160	1.16329	9.99862	27	6476	6400	6400	6364
34	8.90102	158	8.90247	159	1.16354	9.99861	26	6680	6600	6600	6557
35	8.90260	157	8.90405	158	1.16379	9.99860	25	6884	6800	6800	6755
36	8.90417	156	8.90562	157	1.16404	9.99859	24	7088	7000	7000	6953
37	8.90574	155	8.90719	156	1.16429	9.99858	23	7292	7200	7200	7154
38	8.90730	155	8.90875	156	1.16454	9.99857	22	7496	7400	7400	7351
39	8.90885	155	8.91029	156	1.16479	9.99856	21	7700	7600	7600	7551
40	8.91040	155	8.91185	155	1.16504	9.99855	20	7904	7800	7800	7750
41	8.91195	154	8.91340	155	1.16529	9.99854	19	8108	8000	8000	7950
42	8.91349	153	8.91495	155	1.16554	9.99853	18	8312	8200	8200	8150
43	8.91502	153	8.91650	153	1.16579	9.99852	17	8516	8400	8400	8354
44	8.91655	152	8.91803	154	1.16604	9.99851	16	8720	8600	8600	8557
45	8.91807	152	8.91957	153	1.16629	9.99850	15	8924	8800	8800	8755
46	8.91959	151	8.92110	152	1.16654	9.99849	14	9128	9000	9000	8953
47	8.92110	151	8.92262	152	1.16679	9.99848	13	9332	9200	9200	9154
48	8.92261	150	8.92414	151	1.16704	9.99847	12	9536	9400	9400	9357
49	8.92411	150	8.92565	151	1.16729	9.99846	11	9740	9600	9600	9557
50	8.92561	149	8.92716	150	1.16754	9.99845	10	9944	9800	9800	9755
51	8.92710	149	8.92866	150	1.16779	9.99844	9	10148	10000	10000	9953
52	8.92859	148	8.93016	149	1.16804	9.99843	8	10352	10200	10200	10154
53	8.93007	147	8.93165	148	1.16829	9.99842	7	10556	10400	10400	10357
54	8.93154	147	8.93313	149	1.16854	9.99841	6	10760	10600	10600	10557
55	8.93301	147	8.93462	147	1.16879	9.99840	5	10964	10800	10800	10755
56	8.93448	146	8.93609	147	1.16904	9.99839	4	11168	11000	11000	10953
57	8.93594	146	8.93756	147	1.16929	9.99838	3	11372	11200	11200	11154
58	8.93740	146	8.93903	146	1.16954	9.99837	2	11576	11400	11400	11357
59	8.93885	145	8.94049	146	1.16979	9.99836	1	11780	11600	11600	11557
60	8.94030	145	8.94195	146	1.17004	9.99835	0	11984	11800	11800	11755
	L Cos	d	L Ctn	c d	L Tan	L Sin	'	Prop. Pts.			

<i>n</i>	L Sin	<i>d</i>	L Tan	<i>cd</i>	L Ctn	L Cos		Prop Pts
0	8.94 930	144	8.94 135	100	1.05 695	9.99 854	40	125 135 142 147
1	8.94 174	143	8.94 240	100	1.05 690	9.99 835		
2	8.94 317	143	8.94 405	100	1.05 515	9.99 832		4 6 9 14
3	8.94 461	144	8.94 550	100	1.05 370	9.99 821		16 21 28 34
4	8.94 604	144	8.94 700	100	1.05 227	9.99 810		30 37 46 54
5	8.94 746	141	8.94 817	100	1.05 083	9.99 800	55	50 58 68 79
6	8.94 887	141	8.95 000	100	1.04 940	9.99 825		135.0 134.1 133.2 132.3
7	8.95 029	142	8.95 202	100	1.04 798	9.99 817		
8	8.95 170	141	8.95 344	100	1.04 655	9.99 825		145 146 144 143
9	8.95 310	140	8.95 495	100	1.04 514	9.99 824		29.2 29.0 28.8 28.6
10	8.95 450	139	8.95 627	100	1.04 373	9.99 823	50	43.8 43.5 43.2 42.9
11	8.95 589	139	8.95 767	100	1.04 233	9.99 822		58.4 58.0 57.6 57.2
12	8.95 728	139	8.95 908	100	1.04 092	9.99 821		73.0 72.5 72.0 71.5
13	8.95 867	139	8.96 047	100	1.03 951	9.99 820		87.6 87.0 86.4 85.8
14	8.96 005	138	8.96 187	100	1.03 810	9.99 819		102.2 101.5 100.8 100.1
15	8.96 143	138	8.96 325	100	1.03 670	9.99 818	45	116.8 116.0 115.2 114.4
16	8.96 280	137	8.96 464	100	1.03 530	9.99 816		131.4 130.5 129.6 128.7
17	8.96 417	137	8.96 602	100	1.03 390	9.99 814		
18	8.96 553	136	8.96 739	100	1.03 251	9.99 813		
19	8.96 689	136	8.96 877	100	1.03 123	9.99 812	40	
20	8.96 825	135	8.97 013	100	1.02 987	9.99 810		
21	8.96 960	135	8.97 150	100	1.02 850	9.99 810		
22	8.97 095	135	8.97 285	100	1.02 715	9.99 809		
23	8.97 229	134	8.97 421	100	1.02 579	9.99 808		132 137 138 135
24	8.97 363	134	8.97 555	100	1.02 444	9.99 807		
25	8.97 496	133	8.97 691	100	1.02 309	9.99 806	35	2 27.6 27.4 27.2 27.0
26	8.97 629	133	8.97 825	100	1.02 175	9.99 804		4 41.4 41.1 40.8 40.5
27	8.97 762	133	8.97 959	100	1.02 041	9.99 803		6 55.2 54.8 54.4 54.0
28	8.97 894	132	8.98 092	100	1.01 906	9.99 802		8 69.0 68.5 68.0 67.5
29	8.98 026	132	8.98 225	100	1.01 775	9.99 801		6 82.8 82.2 81.6 81.0
30	8.98 157	131	8.98 358	100	1.01 642	9.99 800	30	7 96.6 95.9 95.2 94.5
31	8.98 288	131	8.98 490	100	1.01 510	9.99 798		8 110.4 109.6 108.8 108.0
32	8.98 419	130	8.98 622	100	1.01 373	9.99 796		9 124.2 123.3 122.4 121.5
33	8.98 549	130	8.98 753	100	1.01 247	9.99 794	25	
34	8.98 679	129	8.98 884	100	1.01 116	9.99 793		134 134 132 131
35	8.98 808	129	8.99 015	100	1.00 985	9.99 792		
36	8.98 937	129	8.99 145	100	1.00 855	9.99 792		
37	8.99 066	128	8.99 275	100	1.00 725	9.99 791		
38	8.99 194	128	8.99 405	100	1.00 595	9.99 790		135 135 133 132
39	8.99 322	127	8.99 517	100	1.00 465	9.99 788	20	2 29.0 28.8 28.6 28.4
40	8.99 450	127	8.99 692	100	1.00 335	9.99 787		4 32.0 31.7 31.4 31.1
41	8.99 577	127	8.99 791	100	1.00 200	9.99 786		6 45.0 44.5 44.0 43.5
42	8.99 704	126	8.99 919	100	1.00 061	9.99 785		8 58.0 57.4 56.8 56.2
43	8.99 830	126	9.00 046	100	0.99 924	9.99 783		7 71.0 70.3 69.6 68.9
44	8.99 956	125	9.00 174	100	0.99 785	9.99 782		8 104.0 103.2 102.4 101.6
45	9.00 082	125	9.00 301	100	0.99 646	9.99 781	15	9 117.0 116.1 115.2 114.3
46	9.00 207	125	9.00 427	100	0.99 505	9.99 779		
47	9.00 332	125	9.00 553	100	0.99 447	9.99 777		126 125 124 123
48	9.00 456	124	9.00 679	100	0.99 321	9.99 777		2 25.2 25.0 24.8 24.6
49	9.00 581	124	9.00 805	100	0.99 195	9.99 776		4 37.8 37.5 37.2 36.9
50	9.00 704	124	9.00 930	100	0.99 070	9.99 774	10	6 50.4 50.0 49.6 49.2
51	9.00 828	123	9.01 055	100	0.98 945	9.99 772		8 63.0 62.5 62.0 61.5
52	9.00 951	123	9.01 179	100	0.98 821	9.99 771		6 75.6 75.0 74.4 73.8
53	9.01 074	122	9.01 303	100	0.98 697	9.99 771		7 88.2 87.5 86.8 86.1
54	9.01 196	122	9.01 427	100	0.98 573	9.99 770		8 100.8 100.0 99.2 98.4
55	9.01 318	122	9.01 550	100	0.98 450	9.99 768	5	9 113.4 112.5 111.6 110.7
56	9.01 440	121	9.01 673	100	0.98 327	9.99 767		
57	9.01 561	121	9.01 795	100	0.98 204	9.99 765		
58	9.01 682	121	9.01 918	100	0.98 082	9.99 764		
59	9.01 803	120	9.02 040	100	0.97 960	9.99 763		
60	9.01 923	120	9.02 162	100	0.97 838	9.99 761	0	
	L Cos	<i>d</i>	L Ctn	<i>cd</i>	L Tan	L Sin		Prop. Pts.

	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.				
0	9.01 923		9.02 162		0.97 838	9.99 761	60					
1	9.02 043	120	9.02 283	121	0.97 717	9.99 760	59					
2	9.02 163	120	9.02 404	121	0.97 596	9.99 759	58					
3	9.02 283	120	9.02 525	121	0.97 475	9.99 757	57					
4	9.02 402	119	9.02 645	120	0.97 355	9.99 756	56					
		118		121								
5	9.02 520	119	9.02 766	119	0.97 234	9.99 755	55		121	120	119	118
6	9.02 639	118	9.02 885	120	0.97 115	9.99 753	54	2	24.2	24.0	23.8	23.6
7	9.02 757	117	9.03 005	119	0.96 995	9.99 752	53	3	36.3	36.0	35.7	35.4
8	9.02 874	118	9.03 124	119	0.96 876	9.99 751	52	4	48.4	48.0	47.6	47.2
9	9.02 992	118	9.03 242	118	0.96 758	9.99 749	51	5	60.5	60.0	59.5	59.0
		117		119				6	72.6	72.0	71.4	70.8
10	9.03 109	117	9.03 361	118	0.96 639	9.99 748	50	7	84.7	84.0	83.3	82.6
11	9.03 226	116	9.03 479	118	0.96 521	9.99 747	49	8	96.8	96.0	95.2	94.4
12	9.03 342	116	9.03 597	117	0.96 403	9.99 745	48	9	108.9	108.0	107.1	106.2
13	9.03 458	116	9.03 714	118	0.96 286	9.99 744	47					
14	9.03 574	116	9.03 832	118	0.96 168	9.99 742	46	2	117	116	115	114
		116		116				3	23.4	23.2	23.0	22.8
15	9.03 690	115	9.03 948	117	0.96 052	9.99 741	45	4	35.1	34.8	34.5	34.2
16	9.03 805	115	9.04 065	116	0.95 935	9.99 740	44	5	46.8	46.4	46.0	45.6
17	9.03 920	115	9.04 181	116	0.95 819	9.99 738	43	6	58.5	58.0	57.5	57.0
18	9.04 034	114	9.04 297	116	0.95 703	9.99 737	42	7	70.2	69.6	69.0	68.4
19	9.04 149	115	9.04 413	116	0.95 587	9.99 736	41	8	81.9	81.2	80.5	79.8
		113		115				9	93.6	92.8	92.0	91.2
20	9.04 262	114	9.04 528	115	0.95 472	9.99 734	40		105.3	104.4	103.5	102.6
21	9.04 376	114	9.04 643	115	0.95 357	9.99 733	39	2	113	112	111	110
22	9.04 490	113	9.04 758	115	0.95 242	9.99 731	38	3	22.6	22.4	22.2	22.0
23	9.04 603	113	9.04 873	115	0.95 127	9.99 730	37	4	33.9	33.6	33.3	33.0
24	9.04 715	112	9.04 987	114	0.95 013	9.99 728	36	5	45.2	44.8	44.4	44.0
		113		114				6	56.5	56.0	55.5	55.0
25	9.04 828	112	9.05 101	114	0.94 899	9.99 727	35	7	67.8	67.2	66.6	66.0
26	9.04 940	112	9.05 214	114	0.94 786	9.99 726	34	8	79.1	78.4	77.7	77.0
27	9.05 052	112	9.05 328	114	0.94 672	9.99 724	33	9	90.4	89.6	88.8	88.0
28	9.05 164	111	9.05 441	113	0.94 559	9.99 723	32		101.7	100.8	99.9	99.0
29	9.05 275	111	9.05 553	112	0.94 447	9.99 721	31	2	109	108	107	106
		111		113				3	21.8	21.6	21.4	21.2
30	9.05 386	111	9.05 666	112	0.94 334	9.99 720	30	4	32.7	32.4	32.1	31.8
31	9.05 497	110	9.05 778	112	0.94 222	9.99 718	29	5	43.6	43.2	42.8	42.4
32	9.05 607	110	9.05 890	112	0.94 110	9.99 717	28	6	54.5	54.0	53.5	53.0
33	9.05 717	110	9.06 002	111	0.93 998	9.99 716	27	7	65.4	64.8	64.2	63.6
34	9.05 827	110	9.06 113	111	0.93 887	9.99 714	26	8	76.3	75.6	74.9	74.2
		110		111				9	87.2	86.4	85.6	84.8
35	9.05 937	109	9.06 224	111	0.93 776	9.99 713	25		98.1	97.2	96.3	95.4
36	9.06 046	109	9.06 335	111	0.93 665	9.99 711	24					
37	9.06 155	109	9.06 445	110	0.93 555	9.99 710	23					
38	9.06 264	109	9.06 556	111	0.93 444	9.99 708	22					
39	9.06 372	108	9.06 666	110	0.93 334	9.99 707	21					
		109		109								
40	9.06 481	108	9.06 775	110	0.93 225	9.99 705	20					
41	9.06 589	108	9.06 885	110	0.93 115	9.99 704	19					
42	9.06 696	107	9.06 994	109	0.93 006	9.99 702	18					
43	9.06 804	108	9.07 103	109	0.92 897	9.99 701	17					
44	9.06 911	107	9.07 211	108	0.92 789	9.99 699	16					
		107		109								
45	9.07 018	106	9.07 320	108	0.92 680	9.99 698	15					
46	9.07 124	107	9.07 428	108	0.92 572	9.99 696	14					
47	9.07 231	106	9.07 536	107	0.92 464	9.99 695	13					
48	9.07 337	106	9.07 643	107	0.92 357	9.99 693	12					
49	9.07 442	105	9.07 751	108	0.92 249	9.99 692	11					
		106		107								
50	9.07 548	105	9.07 858	106	0.92 142	9.99 690	10					
51	9.07 653	105	9.07 964	106	0.92 036	9.99 689	9					
52	9.07 758	105	9.08 071	107	0.91 929	9.99 687	8					
53	9.07 863	105	9.08 177	106	0.91 823	9.99 686	7					
54	9.07 968	105	9.08 283	106	0.91 717	9.99 684	6					
		104		106								
55	9.08 072	104	9.08 389	106	0.91 611	9.99 683	5					
56	9.08 176	104	9.08 495	106	0.91 505	9.99 681	4					
57	9.08 280	104	9.08 600	105	0.91 400	9.99 680	3					
58	9.08 383	103	9.08 705	105	0.91 295	9.99 678	2					
59	9.08 486	103	9.08 810	105	0.91 190	9.99 677	1					
		103		104								
60	9.08 589		9.08 914		0.91 086	9.99 675	0					
	L Cos	d	L Ctn	c d	L Tan	L Sin		Prop. Pts.				

83°—Logarithms of Trigonometric Functions

'	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.				
0	9.08 589		9.08 914		0.91 086	9.99 675	60					
1	9.08 692	103	9.09 019	105	0.90 981	9.99 674	59					
2	9.08 795	103	9.09 123	104	0.90 877	9.99 672	58		105	104	103	102
3	9.08 897	102	9.09 227	104	0.90 773	9.99 670	57	2	21.0	20.8	20.6	20.4
4	9.08 999	102	9.09 330	103	0.90 670	9.99 669	56	3	31.5	31.2	30.9	30.6
5	9.09 101	102	9.09 434	104	0.90 566	9.99 667	55	4	42.0	41.6	41.2	40.8
6	9.09 202	101	9.09 537	103	0.90 463	9.99 666	54	5	52.5	52.0	51.5	51.0
7	9.09 304	102	9.09 640	103	0.90 360	9.99 664	53	6	63.0	62.4	61.8	61.2
8	9.09 405	101	9.09 742	102	0.90 258	9.99 663	52	7	73.5	72.8	72.1	71.4
9	9.09 506	101	9.09 845	103	0.90 155	9.99 661	51	8	84.0	83.2	82.4	81.6
10	9.09 606	100	9.09 947	102	0.90 053	9.99 659	50	9	94.5	93.6	92.7	91.8
11	9.09 707	101	9.10 049	102	0.89 951	9.99 658	49					
12	9.09 807	100	9.10 150	101	0.89 850	9.99 656	48		101	99	98	97
13	9.09 907	100	9.10 252	102	0.89 748	9.99 655	47					
14	9.10 006	99	9.10 353	101	0.89 647	9.99 653	46	2	20.2	19.8	19.6	19.4
15	9.10 106	100	9.10 454	101	0.89 546	9.99 651	45	3	30.3	29.7	29.4	29.1
16	9.10 205	99	9.10 555	101	0.89 445	9.99 650	44	4	40.4	39.6	39.2	38.8
17	9.10 304	99	9.10 656	101	0.89 344	9.99 648	43	5	50.5	49.5	49.0	48.5
18	9.10 402	98	9.10 756	100	0.89 244	9.99 647	42	6	60.6	59.4	58.8	58.2
19	9.10 501	99	9.10 856	100	0.89 144	9.99 645	41	7	70.7	69.3	68.6	67.9
20	9.10 599	98	9.10 956	100	0.89 044	9.99 643	40	8	80.8	79.2	78.4	77.6
21	9.10 697	98	9.11 056	99	0.88 944	9.99 642	39	9	90.9	89.1	88.2	87.3
22	9.10 795	98	9.11 155	99	0.88 845	9.99 640	38					
23	9.10 893	98	9.11 254	99	0.88 746	9.99 638	37		96	95	94	93
24	9.10 990	97	9.11 353	99	0.88 647	9.99 637	36	2	19.2	19.0	18.8	18.6
25	9.11 087	97	9.11 452	99	0.88 548	9.99 635	35	3	28.8	28.5	28.2	27.9
26	9.11 184	97	9.11 551	99	0.88 449	9.99 633	34	4	38.4	38.0	37.6	37.2
27	9.11 281	97	9.11 649	98	0.88 351	9.99 632	33	5	48.0	47.5	47.0	46.5
28	9.11 377	96	9.11 747	98	0.88 253	9.99 630	32	6	57.6	57.0	56.4	55.8
29	9.11 474	97	9.11 845	98	0.88 155	9.99 629	31	7	67.2	66.5	65.8	65.1
30	9.11 570	96	9.11 943	98	0.88 057	9.99 627	30	8	76.8	76.0	75.2	74.4
31	9.11 666	96	9.12 040	97	0.87 960	9.99 625	29	9	86.4	85.5	84.6	83.7
32	9.11 761	95	9.12 138	98	0.87 862	9.99 624	28					
33	9.11 857	96	9.12 235	97	0.87 765	9.99 622	27					
34	9.11 952	95	9.12 332	97	0.87 668	9.99 620	26		92	91	90	
35	9.12 047	95	9.12 428	96	0.87 572	9.99 618	25	2	18.4	18.2	18.0	
36	9.12 142	95	9.12 525	97	0.87 475	9.99 617	24	3	27.6	27.3	27.0	
37	9.12 236	94	9.12 621	96	0.87 379	9.99 615	23	4	36.8	36.4	36.0	
38	9.12 331	95	9.12 717	96	0.87 283	9.99 613	22	5	46.0	45.5	45.0	
39	9.12 425	94	9.12 813	96	0.87 187	9.99 612	21	6	55.2	54.6	54.0	
40	9.12 519	94	9.12 909	96	0.87 091	9.99 610	20	7	64.4	63.7	63.0	
41	9.12 612	93	9.13 004	95	0.86 996	9.99 608	19	8	73.6	72.8	72.0	
42	9.12 706	94	9.13 099	95	0.86 901	9.99 607	18	9	82.8	81.9	81.0	
43	9.12 799	93	9.13 194	95	0.86 806	9.99 605	17					
44	9.12 892	93	9.13 289	95	0.86 711	9.99 603	16					
45	9.12 985	93	9.13 384	95	0.86 616	9.99 601	15					
46	9.13 078	93	9.13 478	94	0.86 522	9.99 600	14					
47	9.13 171	93	9.13 573	95	0.86 427	9.99 598	13					
48	9.13 263	92	9.13 667	94	0.86 333	9.99 596	12					
49	9.13 355	92	9.13 761	94	0.86 239	9.99 595	11					
50	9.13 447	92	9.13 854	93	0.86 146	9.99 593	10					
51	9.13 539	92	9.13 948	94	0.86 052	9.99 591	9					
52	9.13 630	91	9.14 041	93	0.85 959	9.99 589	8					
53	9.13 722	92	9.14 134	93	0.85 866	9.99 588	7					
54	9.13 813	91	9.14 227	93	0.85 773	9.99 586	6					
55	9.13 904	91	9.14 320	93	0.85 680	9.99 584	5					
56	9.13 994	90	9.14 412	92	0.85 588	9.99 582	4					
57	9.14 085	91	9.14 504	92	0.85 496	9.99 581	3					
58	9.14 175	90	9.14 597	93	0.85 403	9.99 579	2					
59	9.14 266	91	9.14 688	91	0.85 312	9.99 577	1					
60	9.14 356	90	9.14 780	92	0.85 220	9.99 575	0					
	L Cos	d	L Ctn	c d	L Tan	L Sin	'	Prop. Pts.				

From the top :

For 7°+ or 187°+,
read as printed ; for
97°+ or 277°+, read
co-function.

From the bottom :

For 82°+ or 262°+,
read as printed ; for
172°+ or 352°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.			
0	9.14 356		9.14 780		0.85 220	9.99 575	60				
1	9.14 445	89	9.14 872	92	0.85 128	9.99 574	59				
2	9.14 535	90	9.14 963	91	0.85 037	9.99 572	58				
3	9.14 624	90	9.15 054	91	0.84 946	9.99 570	57				
4	9.14 714	89	9.15 145	91	0.84 855	9.99 568	56				
5	9.14 803	89	9.15 236	91	0.84 764	9.99 566	55				
6	9.14 891	89	9.15 327	91	0.84 673	9.99 565	54				
7	9.14 980	89	9.15 417	91	0.84 583	9.99 563	53				
8	9.15 069	89	9.15 508	91	0.84 492	9.99 561	52				
9	9.15 157	88	9.15 598	90	0.84 402	9.99 559	51				
10	9.15 245	88	9.15 688	90	0.84 312	9.99 557	50				
11	9.15 333	88	9.15 777	89	0.84 223	9.99 556	49				
12	9.15 421	88	9.15 867	90	0.84 133	9.99 554	48				
13	9.15 508	88	9.15 956	89	0.84 044	9.99 552	47				
14	9.15 596	87	9.16 046	90	0.83 954	9.99 550	46				
15	9.15 683	87	9.16 135	89	0.83 865	9.99 548	45				
16	9.15 770	87	9.16 224	88	0.83 776	9.99 546	44				
17	9.15 857	87	9.16 312	88	0.83 688	9.99 545	43				
18	9.15 944	86	9.16 401	89	0.83 599	9.99 543	42				
19	9.16 030	86	9.16 489	88	0.83 511	9.99 541	41				
20	9.16 116	86	9.16 577	88	0.83 423	9.99 539	40				
21	9.16 203	85	9.16 665	88	0.83 335	9.99 537	39				
22	9.16 289	85	9.16 753	88	0.83 247	9.99 535	38				
23	9.16 374	85	9.16 841	87	0.83 159	9.99 533	37				
24	9.16 460	85	9.16 928	87	0.83 072	9.99 532	36				
25	9.16 545	84	9.17 016	87	0.82 984	9.99 530	35				
26	9.16 631	84	9.17 103	87	0.82 897	9.99 528	34				
27	9.16 716	84	9.17 190	87	0.82 810	9.99 526	33				
28	9.16 801	84	9.17 277	87	0.82 723	9.99 524	32				
29	9.16 886	84	9.17 363	86	0.82 637	9.99 522	31				
30	9.16 970	84	9.17 450	86	0.82 550	9.99 520	30				
31	9.17 055	84	9.17 536	86	0.82 464	9.99 518	29				
32	9.17 139	84	9.17 622	86	0.82 378	9.99 517	28				
33	9.17 223	84	9.17 708	86	0.82 292	9.99 515	27				
34	9.17 307	84	9.17 794	86	0.82 206	9.99 513	26				
35	9.17 391	83	9.17 880	86	0.82 120	9.99 511	25				
36	9.17 474	83	9.17 965	86	0.82 035	9.99 509	24				
37	9.17 558	83	9.18 051	85	0.81 949	9.99 507	23				
38	9.17 641	83	9.18 136	85	0.81 864	9.99 505	22				
39	9.17 724	83	9.18 221	85	0.81 779	9.99 503	21				
40	9.17 807	83	9.18 306	85	0.81 694	9.99 501	20				
41	9.17 890	83	9.18 391	84	0.81 609	9.99 499	19				
42	9.17 973	82	9.18 475	84	0.81 525	9.99 497	18				
43	9.18 055	82	9.18 560	84	0.81 440	9.99 495	17				
44	9.18 137	82	9.18 644	84	0.81 356	9.99 494	16				
45	9.18 220	82	9.18 728	84	0.81 272	9.99 492	15				
46	9.18 302	81	9.18 812	84	0.81 188	9.99 490	14				
47	9.18 383	82	9.18 896	84	0.81 104	9.99 488	13				
48	9.18 465	82	9.18 979	84	0.81 021	9.99 486	12				
49	9.18 547	81	9.19 063	83	0.80 937	9.99 484	11				
50	9.18 628	81	9.19 146	83	0.80 854	9.99 482	10				
51	9.18 709	81	9.19 229	83	0.80 771	9.99 480	9				
52	9.18 790	81	9.19 312	83	0.80 688	9.99 478	8				
53	9.18 871	81	9.19 395	83	0.80 605	9.99 476	7				
54	9.18 952	81	9.19 478	83	0.80 522	9.99 474	6				
55	9.19 033	80	9.19 561	82	0.80 439	9.99 472	5				
56	9.19 113	80	9.19 643	82	0.80 357	9.99 470	4				
57	9.19 193	80	9.19 725	82	0.80 275	9.99 468	3				
58	9.19 273	80	9.19 807	82	0.80 193	9.99 466	2				
59	9.19 353	80	9.19 889	82	0.80 111	9.99 464	1				
60	9.19 433		9.19 971		0.80 029	9.99 462	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin		Prop. Pts.			

	L Sin	d	L Tan	c d	L Ctn	L Cos		Prop. Pts.			
0	9.19 433		9.19 971		0.80 029	9.99 462	60				
1	9.19 513	80	9.20 053	82	0.79 947	9.99 460	59				
2	9.19 592	79	9.20 134	81	0.79 866	9.99 458	58				
3	9.19 672	80	9.20 216	82	0.79 784	9.99 456	57				
4	9.19 751	79	9.20 297	81	0.79 703	9.99 454	56				
5	9.19 830	79	9.20 378	81	0.79 622	9.99 452	55				
6	9.19 909	79	9.20 459	81	0.79 541	9.99 450	54				
7	9.19 988	79	9.20 540	81	0.79 460	9.99 448	53				
8	9.20 067	79	9.20 621	81	0.79 379	9.99 446	52				
9	9.20 145	78	9.20 701	80	0.79 299	9.99 444	51				
10	9.20 223	78	9.20 782	81	0.79 218	9.99 442	50				
11	9.20 302	78	9.20 862	80	0.79 138	9.99 440	49				
12	9.20 380	78	9.20 942	80	0.79 058	9.99 438	48				
13	9.20 458	77	9.21 022	80	0.78 978	9.99 436	47				
14	9.20 535	78	9.21 102	80	0.78 898	9.99 434	46				
15	9.20 613	78	9.21 182	79	0.78 818	9.99 432	45				
16	9.20 691	77	9.21 261	79	0.78 739	9.99 429	44				
17	9.20 768	77	9.21 341	80	0.78 659	9.99 427	43				
18	9.20 845	77	9.21 420	79	0.78 580	9.99 425	42				
19	9.20 922	77	9.21 499	79	0.78 501	9.99 423	41				
20	9.20 999	77	9.21 578	79	0.78 422	9.99 421	40				
21	9.21 076	77	9.21 657	79	0.78 343	9.99 419	39				
22	9.21 153	76	9.21 736	78	0.78 264	9.99 417	38				
23	9.21 229	76	9.21 814	78	0.78 186	9.99 415	37				
24	9.21 306	76	9.21 893	78	0.78 107	9.99 413	36				
25	9.21 382	76	9.21 971	78	0.78 029	9.99 411	35				
26	9.21 458	76	9.22 049	78	0.77 951	9.99 409	34				
27	9.21 534	76	9.22 127	78	0.77 873	9.99 407	33				
28	9.21 610	75	9.22 205	78	0.77 795	9.99 404	32				
29	9.21 685	75	9.22 283	78	0.77 717	9.99 402	31				
30	9.21 761	75	9.22 361	77	0.77 639	9.99 400	30				
31	9.21 836	75	9.22 438	77	0.77 562	9.99 398	29				
32	9.21 912	75	9.22 516	77	0.77 484	9.99 396	28				
33	9.21 987	75	9.22 593	77	0.77 407	9.99 394	27				
34	9.22 062	75	9.22 670	77	0.77 330	9.99 392	26				
35	9.22 137	74	9.22 747	77	0.77 253	9.99 390	25				
36	9.22 211	75	9.22 824	77	0.77 176	9.99 388	24				
37	9.22 286	75	9.22 901	77	0.77 099	9.99 385	23				
38	9.22 361	74	9.22 977	77	0.77 023	9.99 383	22				
39	9.22 435	74	9.23 054	76	0.76 946	9.99 381	21				
40	9.22 509	74	9.23 130	76	0.76 870	9.99 379	20				
41	9.22 583	74	9.23 206	77	0.76 794	9.99 377	19				
42	9.22 657	74	9.23 283	76	0.76 717	9.99 375	18				
43	9.22 731	74	9.23 359	76	0.76 641	9.99 372	17				
44	9.22 805	73	9.23 435	75	0.76 565	9.99 370	16				
45	9.22 878	74	9.23 510	76	0.76 490	9.99 368	15				
46	9.22 952	73	9.23 586	75	0.76 414	9.99 366	14				
47	9.23 025	73	9.23 661	76	0.76 339	9.99 364	13				
48	9.23 098	73	9.23 737	75	0.76 263	9.99 362	12				
49	9.23 171	73	9.23 812	75	0.76 188	9.99 359	11				
50	9.23 244	73	9.23 887	75	0.76 113	9.99 357	10				
51	9.23 317	73	9.23 962	75	0.76 038	9.99 355	9				
52	9.23 390	72	9.24 037	75	0.75 963	9.99 353	8				
53	9.23 462	73	9.24 112	74	0.75 888	9.99 351	7				
54	9.23 535	72	9.24 186	75	0.75 814	9.99 348	6				
55	9.23 607	72	9.24 261	74	0.75 739	9.99 346	5				
56	9.23 679	73	9.24 335	75	0.75 665	9.99 344	4				
57	9.23 752	71	9.24 410	74	0.75 590	9.99 342	3				
58	9.23 823	72	9.24 484	74	0.75 516	9.99 340	2				
59	9.23 895	72	9.24 558	74	0.75 442	9.99 337	1				
60	9.23 967		9.24 632		0.75 368	9.99 335	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin		Prop. Pts.			

'	L Sin		d	L Tan		c d	L Ctn	L Cos		d	Prop. Pts.			
0	9.23 967		72	9.24 632			0.75 368	9.99 335		2	60			
1	9.24 039		71	9.24 706		74	0.75 294	9.99 333		2				
2	9.24 110		71	9.24 779		73	0.75 221	9.99 331		3				
3	9.24 181		71	9.24 853		74	0.75 147	9.99 328		3				
4	9.24 253		72	9.24 926		73	0.75 074	9.99 326		2				
5	9.24 324		71	9.25 000		74	0.75 000	9.99 324		2				
6	9.24 395		71	9.25 073		73	0.74 927	9.99 322		2				
7	9.24 466		71	9.25 146		73	0.74 854	9.99 319		3				
8	9.24 536		70	9.25 219		73	0.74 781	9.99 317		2				
9	9.24 607		71	9.25 292		73	0.74 708	9.99 315		2				
10	9.24 677		70	9.25 365		73	0.74 635	9.99 313		2				
11	9.24 748		71	9.25 437		72	0.74 563	9.99 310		3				
12	9.24 818		70	9.25 510		73	0.74 490	9.99 308		2				
13	9.24 888		70	9.25 582		72	0.74 418	9.99 306		2				
14	9.24 958		70	9.25 655		73	0.74 345	9.99 304		3				
15	9.25 028		70	9.25 727		72	0.74 273	9.99 301		2				
16	9.25 098		70	9.25 799		72	0.74 201	9.99 299		2				
17	9.25 168		69	9.25 871		72	0.74 129	9.99 297		3				
18	9.25 237		70	9.25 943		72	0.74 057	9.99 294		3				
19	9.25 307		69	9.26 015		71	0.73 985	9.99 292		2				
20	9.25 376		69	9.26 086		72	0.73 914	9.99 290		2				
21	9.25 445		69	9.26 158		71	0.73 842	9.99 288		3				
22	9.25 514		69	9.26 229		72	0.73 771	9.99 285		2				
23	9.25 583		69	9.26 301		71	0.73 699	9.99 283		2				
24	9.25 652		69	9.26 372		71	0.73 628	9.99 281		3				
25	9.25 721		69	9.26 443		71	0.73 557	9.99 278		3				
26	9.25 790		68	9.26 514		71	0.73 486	9.99 276		2				
27	9.25 858		69	9.26 585		70	0.73 415	9.99 274		3				
28	9.25 927		68	9.26 655		71	0.73 345	9.99 271		3				
29	9.25 995		68	9.26 726		71	0.73 274	9.99 269		2				
30	9.26 063		68	9.26 797		70	0.73 203	9.99 267		3				
31	9.26 131		68	9.26 867		70	0.73 133	9.99 264		2				
32	9.26 199		68	9.26 937		71	0.73 063	9.99 262		2				
33	9.26 267		68	9.27 008		70	0.72 992	9.99 260		3				
34	9.26 335		68	9.27 078		70	0.72 922	9.99 257		2				
35	9.26 403		67	9.27 148		70	0.72 852	9.99 255		3				
36	9.26 470		68	9.27 218		70	0.72 782	9.99 252		2				
37	9.26 538		67	9.27 288		69	0.72 712	9.99 250		2				
38	9.26 605		67	9.27 357		70	0.72 643	9.99 248		3				
39	9.26 672		67	9.27 427		69	0.72 573	9.99 245		2				
40	9.26 739		67	9.27 496		70	0.72 504	9.99 243		2				
41	9.26 806		67	9.27 566		69	0.72 434	9.99 241		3				
42	9.26 873		67	9.27 635		69	0.72 365	9.99 238		2				
43	9.26 940		67	9.27 704		69	0.72 296	9.99 236		3				
44	9.27 007		66	9.27 773		69	0.72 227	9.99 233		2				
45	9.27 073		67	9.27 842		69	0.72 158	9.99 231		2				
46	9.27 140		66	9.27 911		69	0.72 089	9.99 229		3				
47	9.27 206		67	9.27 980		69	0.72 020	9.99 226		2				
48	9.27 273		66	9.28 049		68	0.71 951	9.99 224		3				
49	9.27 339		66	9.28 117		69	0.71 883	9.99 221		2				
50	9.27 405		66	9.28 186		68	0.71 814	9.99 219		2				
51	9.27 471		66	9.28 254		69	0.71 746	9.99 217		3				
52	9.27 537		65	9.28 323		68	0.71 677	9.99 214		2				
53	9.27 602		66	9.28 391		68	0.71 609	9.99 212		3				
54	9.27 668		66	9.28 459		68	0.71 541	9.99 209		2				
55	9.27 734		65	9.28 527		68	0.71 473	9.99 207		3				
56	9.27 799		65	9.28 595		67	0.71 405	9.99 204		2				
57	9.27 864		66	9.28 662		68	0.71 338	9.99 202		3				
58	9.27 930		65	9.28 730		68	0.71 270	9.99 200		2				
59	9.27 995		65	9.28 798		67	0.71 202	9.99 197		3				
60	9.28 060			9.28 865			0.71 135	9.99 195		2				
	L Cos	d		L Ctn	c d		L Tan	L Sin	d		Prop. Pts.			

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.		
0	9.28 060		9.28 865		0.71 135	9.99 195		60		
1	9.28 125	65	9.28 933	68	0.71 067	9.99 192	3	59		
2	9.28 190	65	9.29 000	67	0.71 000	9.99 190	2	58	68	67
3	9.28 254	64	9.29 067	67	0.70 933	9.99 187	3	57	13.6	13.4
4	9.28 319	65	9.29 134	67	0.70 866	9.99 185	2	56	20.4	20.1
5	9.28 384	65	9.29 201	67	0.70 799	9.99 182	3	55	27.2	26.8
6	9.28 448	64	9.29 268	67	0.70 732	9.99 180	2	54	34.0	33.5
7	9.28 512	64	9.29 335	67	0.70 665	9.99 177	3	53	40.8	40.2
8	9.28 577	65	9.29 402	67	0.70 598	9.99 175	2	52	47.6	46.9
9	9.28 641	64	9.29 468	66	0.70 532	9.99 172	3	51	54.4	53.6
10	9.28 705	64	9.29 535	67	0.70 465	9.99 170	2	50	61.2	60.3
11	9.28 769	64	9.29 601	66	0.70 399	9.99 167	3	49		59.4
12	9.28 833	64	9.29 668	67	0.70 332	9.99 165	2	48		
13	9.28 896	63	9.29 734	66	0.70 266	9.99 162	3	47	65	64
14	9.28 960	64	9.29 800	66	0.70 200	9.99 160	2	46	13.0	12.8
15	9.29 024	64	9.29 866	66	0.70 134	9.99 157	3	45	19.5	19.2
16	9.29 087	63	9.29 932	66	0.70 068	9.99 155	2	44	26.0	25.6
17	9.29 150	63	9.29 998	66	0.70 002	9.99 152	3	43	32.5	32.0
18	9.29 214	64	9.30 064	66	0.69 936	9.99 150	2	42	39.0	38.4
19	9.29 277	63	9.30 130	66	0.69 870	9.99 147	3	41	45.5	44.8
20	9.29 340	63	9.30 195	65	0.69 805	9.99 145	2	40	52.0	51.2
21	9.29 403	63	9.30 261	66	0.69 739	9.99 142	3	39	58.5	57.6
22	9.29 466	63	9.30 326	65	0.69 674	9.99 140	2	38		
23	9.29 529	63	9.30 391	65	0.69 609	9.99 137	3	37	62	61
24	9.29 591	62	9.30 457	66	0.69 543	9.99 135	2	36	12.4	12.2
25	9.29 654	63	9.30 522	65	0.69 478	9.99 132	3	35	18.6	18.3
26	9.29 716	62	9.30 587	65	0.69 413	9.99 130	2	34	24.8	24.4
27	9.29 779	63	9.30 652	65	0.69 348	9.99 127	3	33	31.0	30.5
28	9.29 841	62	9.30 717	65	0.69 283	9.99 124	2	32	37.2	36.6
29	9.29 903	62	9.30 782	65	0.69 218	9.99 122	3	31	43.4	42.7
30	9.29 966	63	9.30 846	64	0.69 154	9.99 119	2	30	49.6	48.8
31	9.30 028	62	9.30 911	65	0.69 089	9.99 117	3	29	55.8	54.9
32	9.30 090	62	9.30 975	64	0.69 025	9.99 114	2	28		
33	9.30 151	61	9.31 040	65	0.68 960	9.99 112	3	27	59	3
34	9.30 213	62	9.31 104	64	0.68 896	9.99 109	2	26	11.8	0.6
35	9.30 275	62	9.31 168	64	0.68 832	9.99 106	3	25	17.7	0.9
36	9.30 336	61	9.31 233	65	0.68 767	9.99 104	2	24	23.6	1.2
37	9.30 398	62	9.31 297	64	0.68 703	9.99 101	3	23	29.5	1.5
38	9.30 459	61	9.31 361	64	0.68 639	9.99 099	2	22	35.4	1.8
39	9.30 521	62	9.31 425	64	0.68 575	9.99 096	3	21	41.3	2.1
40	9.30 582	61	9.31 489	64	0.68 511	9.99 093	2	20	47.2	2.4
41	9.30 643	61	9.31 552	63	0.68 448	9.99 091	3	19	53.1	2.7
42	9.30 704	61	9.31 616	64	0.68 384	9.99 088	2	18		
43	9.30 765	61	9.31 679	63	0.68 321	9.99 086	3	17	From the top :	
44	9.30 826	61	9.31 743	64	0.68 257	9.99 083	2	16	For 11°+ or 191°+,	
45	9.30 887	61	9.31 806	63	0.68 194	9.99 080	3	15	read as printed ; for	
46	9.30 947	60	9.31 870	64	0.68 130	9.99 078	2	14	101°+ or 281°+, read	
47	9.31 008	61	9.31 933	63	0.68 067	9.99 075	3	13	co-function.	
48	9.31 068	60	9.31 996	63	0.68 004	9.99 072	2	12		
49	9.31 129	61	9.32 059	63	0.67 941	9.99 070	3	11	From the bottom :	
50	9.31 189	60	9.32 122	63	0.67 878	9.99 067	2	10	For 78°+ or 258°+,	
51	9.31 250	61	9.32 185	63	0.67 815	9.99 064	3	9	read as printed ; for	
52	9.31 310	60	9.32 248	63	0.67 752	9.99 062	2	8	168°+ or 348°+, read	
53	9.31 370	60	9.32 311	63	0.67 689	9.99 059	3	7	co-function.	
54	9.31 430	60	9.32 373	62	0.67 627	9.99 056	2	6		
55	9.31 490	60	9.32 436	63	0.67 564	9.99 054	3	5		
56	9.31 549	59	9.32 498	62	0.67 502	9.99 051	2	4		
57	9.31 609	60	9.32 561	63	0.67 439	9.99 048	3	3		
58	9.31 669	60	9.32 623	62	0.67 377	9.99 046	2	2		
59	9.31 728	59	9.32 685	62	0.67 315	9.99 043	3	1		
60	9.31 788	60	9.32 747	62	0.67 253	9.99 040	3	0		
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.		

f	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.31 788		9.32 747		0.67 253	9.99 040	60				
1	9.31 847	59	9.32 810	63	0.67 190	9.99 038	59				
2	9.31 907	60	9.32 872	62	0.67 128	9.99 035	58				
3	9.31 966	59	9.32 933	61	0.67 067	9.99 032	57	2	12.6	12.4	12.2
4	9.32 025	59	9.32 995	62	0.67 005	9.99 030	56	3	18.9	18.6	18.3
5	9.32 084	59	9.33 057	62	0.66 943	9.99 027	55	4	25.2	24.8	24.4
6	9.32 143	59	9.33 119	61	0.66 881	9.99 024	54	5	31.5	31.0	30.5
7	9.32 202	59	9.33 180	61	0.66 820	9.99 022	53	6	37.8	37.2	36.6
8	9.32 261	59	9.33 242	62	0.66 758	9.99 019	52	7	44.1	43.4	42.7
9	9.32 319	58	9.33 303	61	0.66 697	9.99 016	51	8	50.4	49.6	48.8
10	9.32 378	59	9.33 365	62	0.66 635	9.99 013	50	9	56.7	55.8	54.9
11	9.32 437	59	9.33 426	61	0.66 574	9.99 011	49				
12	9.32 495	58	9.33 487	61	0.66 513	9.99 008	48		60	59	58
13	9.32 553	58	9.33 548	61	0.66 452	9.99 005	47	2	12.0	11.8	11.6
14	9.32 612	59	9.33 609	61	0.66 391	9.99 002	46	3	18.0	17.7	17.4
15	9.32 670	58	9.33 670	61	0.66 330	9.99 000	45	4	24.0	23.6	23.2
16	9.32 728	58	9.33 731	61	0.66 269	9.98 997	44	5	30.0	29.5	29.0
17	9.32 786	58	9.33 792	61	0.66 208	9.98 994	43	6	36.0	35.4	34.8
18	9.32 844	58	9.33 853	61	0.66 147	9.98 991	42	7	42.0	41.3	40.6
19	9.32 902	58	9.33 913	61	0.66 087	9.98 989	41	8	48.0	47.2	46.4
20	9.32 960	58	9.33 974	61	0.66 026	9.98 986	40	9	54.0	53.1	52.2
21	9.33 018	58	9.34 034	60	0.65 966	9.98 983	39				
22	9.33 075	57	9.34 095	61	0.65 905	9.98 980	38				
23	9.33 133	58	9.34 155	60	0.65 845	9.98 978	37		57	56	
24	9.33 190	57	9.34 215	60	0.65 785	9.98 975	36	2	11.4	11.2	
25	9.33 248	58	9.34 276	61	0.65 724	9.98 972	35	3	17.1	16.8	
26	9.33 305	57	9.34 336	60	0.65 664	9.98 969	34	4	22.8	22.4	
27	9.33 362	57	9.34 396	60	0.65 604	9.98 967	33	5	28.5	28.0	
28	9.33 420	58	9.34 456	60	0.65 544	9.98 964	32	6	34.2	33.6	
29	9.33 477	57	9.34 516	60	0.65 484	9.98 961	31	7	39.9	39.2	
30	9.33 534	57	9.34 576	60	0.65 424	9.98 958	30	8	45.6	44.8	
31	9.33 591	56	9.34 635	59	0.65 365	9.98 955	29	9	51.3	50.4	
32	9.33 647	57	9.34 695	60	0.65 305	9.98 953	28				
33	9.33 704	57	9.34 755	60	0.65 245	9.98 950	27		55	3	
34	9.33 761	57	9.34 814	59	0.65 186	9.98 947	26	2	11.0	0.6	
35	9.33 818	58	9.34 874	59	0.65 126	9.98 944	25	3	16.5	0.9	
36	9.33 874	58	9.34 933	59	0.65 067	9.98 941	24	4	22.0	1.2	
37	9.33 931	57	9.34 992	59	0.65 008	9.98 938	23	5	27.5	1.5	
38	9.33 987	56	9.35 051	59	0.64 949	9.98 936	22	6	33.0	1.8	
39	9.34 043	56	9.35 111	60	0.64 889	9.98 933	21	7	38.5	2.1	
40	9.34 100	57	9.35 170	59	0.64 830	9.98 930	20	8	44.0	2.4	
41	9.34 156	56	9.35 229	59	0.64 771	9.98 927	19	9	49.5	2.7	
42	9.34 212	56	9.35 288	59	0.64 712	9.98 924	18				
43	9.34 268	56	9.35 347	59	0.64 653	9.98 921	17				
44	9.34 324	56	9.35 405	58	0.64 595	9.98 919	16				
45	9.34 380	56	9.35 464	59	0.64 536	9.98 916	15	From the top :			
46	9.34 436	56	9.35 523	59	0.64 477	9.98 913	14	For 12°+ or 192°+,			
47	9.34 491	55	9.35 581	58	0.64 419	9.98 910	13	read as printed; for			
48	9.34 547	56	9.35 640	59	0.64 360	9.98 907	12	102°+ or 282°+, read			
49	9.34 602	55	9.35 698	58	0.64 302	9.98 904	11	co-function.			
50	9.34 658	56	9.35 757	59	0.64 243	9.98 901	10	From the bottom :			
51	9.34 713	55	9.35 815	58	0.64 185	9.98 898	9	For 77° or 257°.			
52	9.34 769	56	9.35 873	58	0.64 127	9.98 896	8	read as printed; for			
53	9.34 824	55	9.35 931	58	0.64 069	9.98 893	7	167° or 347°, read			
54	9.34 879	55	9.35 989	58	0.64 011	9.98 890	6	co-function.			
55	9.34 934	55	9.36 047	58	0.63 953	9.98 887	5				
56	9.34 989	55	9.36 105	58	0.63 895	9.98 884	4				
57	9.35 044	55	9.36 163	58	0.63 837	9.98 881	3				
58	9.35 099	55	9.36 221	58	0.63 779	9.98 878	2				
59	9.35 154	55	9.36 279	57	0.63 721	9.98 875	1				
60	9.35 209		9.36 336		0.63 664	9.98 872	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.			

/	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.35 209		9.36 336		0.63 664	9.98 872		60			
1	9.35 263	54	9.36 394	58	0.63 606	9.98 869	3	59			
2	9.35 318	55	9.36 452	58	0.63 548	9.98 867	2	58	58	57	56
3	9.35 373	55	9.36 509	57	0.63 491	9.98 864	3	57	2	11.6	11.4
4	9.35 427	54	9.36 566	57	0.63 434	9.98 861	3	56	3	17.4	17.1
5	9.35 481	54		58			3	55	4	23.2	22.8
6	9.35 536	55	9.36 624	57	0.63 376	9.98 858	3	54	5	29.0	28.5
7	9.35 590	54	9.36 681	57	0.63 319	9.98 855	3	53	6	34.8	34.2
8	9.35 644	54	9.36 738	57	0.63 262	9.98 852	3	52	7	40.6	39.9
9	9.35 698	54	9.36 795	57	0.63 205	9.98 849	3	51	8	46.4	45.6
10	9.35 752	54	9.36 852	57	0.63 148	9.98 846	3	50	9	52.2	51.3
11	9.35 806	54	9.36 909	57	0.63 091	9.98 843	3	49			
12	9.35 860	54	9.36 966	57	0.63 034	9.98 840	3	48			
13	9.35 914	54	9.37 023	57	0.62 977	9.98 837	3	47			
14	9.35 968	54	9.37 080	57	0.62 920	9.98 834	3	46	2	11.0	10.8
15	9.36 022	54	9.37 137	56	0.62 863	9.98 831	3	45	3	16.5	16.2
16	9.36 075	53	9.37 193	57	0.62 807	9.98 828	3	44	4	22.0	21.6
17	9.36 129	54	9.37 250	56	0.62 750	9.98 825	3	43	5	27.5	27.0
18	9.36 182	53	9.37 306	57	0.62 694	9.98 822	3	42	6	33.0	32.4
19	9.36 236	54	9.37 363	57	0.62 637	9.98 819	3	41	7	38.5	37.8
20	9.36 289	53	9.37 419	56	0.62 581	9.98 816	3	40	8	44.0	43.2
21	9.36 342	53	9.37 476	56	0.62 524	9.98 813	3	39	9	49.5	48.6
22	9.36 395	53	9.37 532	56	0.62 468	9.98 810	3	38			
23	9.36 449	54	9.37 588	56	0.62 412	9.98 807	3	37			
24	9.36 502	53	9.37 644	56	0.62 356	9.98 804	3	36			
25	9.36 555	53	9.37 700	56	0.62 300	9.98 801	3	35	2	10.4	10.2
26	9.36 608	53	9.37 756	56	0.62 244	9.98 798	3	34	3	15.6	15.3
27	9.36 660	52	9.37 812	56	0.62 188	9.98 795	3	33	4	20.8	20.4
28	9.36 713	53	9.37 868	56	0.62 132	9.98 792	3	32	5	26.0	25.5
29	9.36 766	53	9.37 924	55	0.62 076	9.98 789	3	31	6	31.2	30.6
30	9.36 819	53	9.37 980	55	0.62 020	9.98 786	3	30	7	36.4	35.7
31	9.36 871	52	9.38 035	56	0.61 965	9.98 783	3	29	8	41.6	40.8
32	9.36 924	53	9.38 091	56	0.61 909	9.98 780	3	28	9	46.8	45.9
33	9.36 976	52	9.38 147	55	0.61 853	9.98 777	3	27			
34	9.37 028	52	9.38 202	55	0.61 798	9.98 774	3	26			
35	9.37 081	53	9.38 257	55	0.61 743	9.98 771	3	25	2	0.8	0.6
36	9.37 133	52	9.38 313	56	0.61 687	9.98 768	3	24	3	1.2	0.9
37	9.37 185	52	9.38 368	55	0.61 632	9.98 765	3	23	4	1.6	1.2
38	9.37 237	52	9.38 423	56	0.61 577	9.98 762	3	22	5	2.0	1.5
39	9.37 289	52	9.38 479	55	0.61 521	9.98 759	3	21	6	2.4	1.8
40	9.37 341	52	9.38 534	55	0.61 466	9.98 756	3	20	7	2.8	2.1
41	9.37 393	52	9.38 589	55	0.61 411	9.98 753	3	19	8	3.2	2.4
42	9.37 445	52	9.38 644	55	0.61 356	9.98 750	3	18	9	3.6	2.7
43	9.37 497	52	9.38 699	55	0.61 301	9.98 746	3	17			
44	9.37 549	52	9.38 754	55	0.61 246	9.98 743	3	16			
45	9.37 600	51	9.38 808	54	0.61 192	9.98 740	3	15			
46	9.37 652	52	9.38 863	55	0.61 137	9.98 737	3	14			
47	9.37 703	51	9.38 918	54	0.61 082	9.98 734	3	13			
48	9.37 755	52	9.38 972	55	0.61 028	9.98 731	3	12			
49	9.37 806	51	9.39 027	55	0.60 973	9.98 728	3	11			
50	9.37 858	52	9.39 082	54	0.60 918	9.98 725	3	10			
51	9.37 909	51	9.39 136	54	0.60 864	9.98 722	3	9			
52	9.37 960	51	9.39 190	55	0.60 810	9.98 719	3	8			
53	9.38 011	51	9.39 245	54	0.60 755	9.98 716	3	7			
54	9.38 062	51	9.39 299	54	0.60 701	9.98 712	3	6			
55	9.38 113	51	9.39 353	54	0.60 647	9.98 709	3	5			
56	9.38 164	51	9.39 407	54	0.60 593	9.98 706	3	4			
57	9.38 215	51	9.39 461	54	0.60 539	9.98 703	3	3			
58	9.38 266	51	9.39 515	54	0.60 485	9.98 700	3	2			
59	9.38 317	51	9.39 569	54	0.60 431	9.98 697	3	1			
60	9.38 368	51	9.39 623	54	0.60 377	9.98 694	3	0			
			9.39 677		0.60 323	9.98 690					
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.		

From the top:

For $13^{\circ}+$ or $193^{\circ}+$,
read as printed; for
 $103^{\circ}+$ or $283^{\circ}+$, read
co-function.

From the bottom:

For 76° or 256° ,
read as printed; for
 $166^{\circ}+$ or $346^{\circ}+$, read
co-function.

							Prop. Pts.					
L Sin	d	L Tan	c d	L Ctn	L Cos	d						
0	9.38 368	50	9.39 677	54	0.60 323	9.98 690	3	60				
1	9.38 418	51	9.39 731	54	0.60 269	9.98 687	3	59				
2	9.38 469	51	9.39 785	54	0.60 215	9.98 684	3	58				
3	9.38 519	51	9.39 838	54	0.60 162	9.98 681	3	57	2	10.8	10.6	10.4
4	9.38 570	50	9.39 892	54	0.60 108	9.98 678	3	56	3	16.2	15.9	15.6
5	9.38 620	50	9.39 945	53	0.60 055	9.98 675	3	55	4	21.6	21.2	20.8
6	9.38 670	51	9.39 999	54	0.60 001	9.98 671	3	54	5	27.0	26.5	26.0
7	9.38 721	50	9.40 052	54	0.59 948	9.98 668	3	53	6	32.4	31.8	31.2
8	9.38 771	50	9.40 106	54	0.59 894	9.98 665	3	52	7	37.8	37.1	36.4
9	9.38 821	50	9.40 159	53	0.59 841	9.98 662	3	51	8	43.2	42.4	41.6
10	9.38 871	50	9.40 212	53	0.59 788	9.98 659	3	50	9	48.6	47.7	46.8
11	9.38 921	50	9.40 266	54	0.59 734	9.98 656	3	49				
12	9.38 971	50	9.40 319	53	0.59 681	9.98 652	3	48				
13	9.39 021	50	9.40 372	53	0.59 628	9.98 649	3	47				
14	9.39 071	50	9.40 425	53	0.59 575	9.98 646	3	46	2	10.2	10.0	9.8
15	9.39 121	49	9.40 478	53	0.59 522	9.98 643	3	45	3	15.3	15.0	14.7
16	9.39 170	50	9.40 531	53	0.59 469	9.98 640	3	44	4	20.4	20.0	19.6
17	9.39 220	50	9.40 584	52	0.59 416	9.98 636	3	43	5	25.5	25.0	24.5
18	9.39 270	49	9.40 636	53	0.59 364	9.98 633	3	42	6	30.6	30.0	29.4
19	9.39 319	50	9.40 689	53	0.59 311	9.98 630	3	41	7	35.7	35.0	34.3
20	9.39 369	49	9.40 742	53	0.59 258	9.98 627	3	40	8	40.8	40.0	39.2
21	9.39 418	49	9.40 795	52	0.59 205	9.98 623	4	39	9	45.9	45.0	44.1
22	9.39 467	49	9.40 847	53	0.59 153	9.98 620	3	38				
23	9.39 517	49	9.40 900	52	0.59 100	9.98 617	3	37				
24	9.39 566	49	9.40 952	53	0.59 048	9.98 614	4	36				
25	9.39 615	49	9.41 005	52	0.58 995	9.98 610	3	35	2	9.6	9.4	
26	9.39 664	49	9.41 057	52	0.58 943	9.98 607	3	34	3	14.4	14.1	
27	9.39 713	49	9.41 109	52	0.58 891	9.98 604	3	33	4	19.2	18.8	
28	9.39 762	49	9.41 161	52	0.58 839	9.98 601	3	32	5	24.0	23.5	
29	9.39 811	49	9.41 214	53	0.58 786	9.98 597	4	31	6	28.8	28.2	
30	9.39 860	49	9.41 266	52	0.58 734	9.98 594	3	30	7	33.6	32.9	
31	9.39 909	49	9.41 318	52	0.58 682	9.98 591	3	29	8	38.4	37.6	
32	9.39 958	49	9.41 370	52	0.58 630	9.98 588	3	28	9	43.2	42.3	
33	9.40 006	48	9.41 422	52	0.58 578	9.98 584	4	27				
34	9.40 055	49	9.41 474	52	0.58 526	9.98 581	3	26				
35	9.40 103	49	9.41 526	52	0.58 474	9.98 578	4	25	2	0.8	0.6	
36	9.40 152	48	9.41 578	51	0.58 422	9.98 574	3	24	3	1.2	0.9	
37	9.40 200	49	9.41 629	52	0.58 371	9.98 571	3	23	4	1.6	1.2	
38	9.40 249	48	9.41 681	52	0.58 319	9.98 568	3	22	5	2.0	1.5	
39	9.40 297	49	9.41 733	52	0.58 267	9.98 565	3	21	6	2.4	1.8	
40	9.40 346	48	9.41 784	51	0.58 216	9.98 561	4	20	7	2.8	2.1	
41	9.40 394	48	9.41 836	52	0.58 164	9.98 558	3	19	8	3.2	2.4	
42	9.40 442	48	9.41 887	51	0.58 113	9.98 555	3	18	9	3.6	2.7	
43	9.40 490	48	9.41 939	52	0.58 061	9.98 551	4	17				
44	9.40 538	48	9.41 990	51	0.58 010	9.98 548	3	16				
45	9.40 586	48	9.42 041	51	0.57 959	9.98 545	3	15				
46	9.40 634	48	9.42 093	52	0.57 907	9.98 541	3	14				
47	9.40 682	48	9.42 144	51	0.57 856	9.98 538	3	13				
48	9.40 730	48	9.42 195	51	0.57 805	9.98 535	3	12				
49	9.40 778	47	9.42 246	51	0.57 754	9.98 531	4	11				
50	9.40 825	48	9.42 297	51	0.57 703	9.98 528	3	10				
51	9.40 873	48	9.42 348	51	0.57 652	9.98 525	3	9				
52	9.40 921	47	9.42 399	51	0.57 601	9.98 521	4	8				
53	9.40 968	48	9.42 450	51	0.57 550	9.98 518	3	7				
54	9.41 016	47	9.42 501	51	0.57 499	9.98 515	3	6				
55	9.41 063	48	9.42 552	51	0.57 448	9.98 511	4	5				
56	9.41 111	47	9.42 603	50	0.57 397	9.98 508	3	4				
57	9.41 158	47	9.42 653	51	0.57 347	9.98 505	3	3				
58	9.41 205	47	9.42 704	51	0.57 296	9.98 501	4	2				
59	9.41 252	48	9.42 755	50	0.57 245	9.98 498	3	1				
60	9.41 300		9.42 805		0.57 195	9.98 494	4	0				
L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.					

From the top:

For 14°+ or 194°+,
read as printed; for
104°+ or 284°+, read
co-function.

From the bottom:

For 75°+ or 255°+,
read as printed; for
165°+ or 345°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.41 300		9.42 805		0.57 195	9.98 494	60				
1	9.41 347	47	9.42 856	51	0.57 144	9.98 491	59				
2	9.41 394	47	9.42 906	50	0.57 094	9.98 488	58				
3	9.41 441	47	9.42 957	51	0.57 043	9.98 484	57				
4	9.41 488	47	9.43 007	50	0.56 993	9.98 481	56	2	10.2	10.0	9.8
5	9.41 535	47	9.43 057	51	0.56 943	9.98 477	55	3	15.3	15.0	14.7
6	9.41 582	47	9.43 108	50	0.56 892	9.98 474	54	4	20.4	20.0	19.6
7	9.41 628	46	9.43 158	50	0.56 842	9.98 471	53	5	25.5	25.0	24.5
8	9.41 675	47	9.43 208	50	0.56 792	9.98 467	52	6	30.6	30.0	29.4
9	9.41 722	47	9.43 258	50	0.56 742	9.98 464	51	7	35.7	35.0	34.3
10	9.41 768	46	9.43 308	50	0.56 692	9.98 460	50	8	40.8	40.0	39.2
11	9.41 815	47	9.43 358	50	0.56 642	9.98 457	49	9	45.9	45.0	44.1
12	9.41 861	46	9.43 408	50	0.56 592	9.98 453	48				
13	9.41 908	47	9.43 458	50	0.56 542	9.98 450	47		48	47	46
14	9.41 954	46	9.43 508	50	0.56 492	9.98 447	46	2	9.6	9.4	9.2
15	9.42 001	47	9.43 558	49	0.56 442	9.98 443	45	3	14.4	14.1	13.8
16	9.42 047	46	9.43 607	50	0.56 393	9.98 440	44	4	19.2	18.8	18.4
17	9.42 093	46	9.43 657	50	0.56 343	9.98 436	43	5	24.0	23.5	23.0
18	9.42 140	47	9.43 707	50	0.56 293	9.98 433	42	6	28.8	28.2	27.6
19	9.42 186	46	9.43 756	49	0.56 244	9.98 429	41	7	33.6	32.9	32.2
20	9.42 232	46	9.43 806	50	0.56 194	9.98 426	40	8	38.4	37.6	36.8
21	9.42 278	46	9.43 855	49	0.56 145	9.98 422	39	9	43.2	42.3	41.4
22	9.42 324	46	9.43 905	50	0.56 095	9.98 419	38				
23	9.42 370	46	9.43 954	49	0.56 046	9.98 415	37		45	44	
24	9.42 416	45	9.44 004	50	0.55 996	9.98 412	36	2	9.0	8.8	
25	9.42 461	46	9.44 053	49	0.55 947	9.98 409	35	3	13.5	13.2	
26	9.42 507	46	9.44 102	49	0.55 898	9.98 405	34	4	18.0	17.6	
27	9.42 553	46	9.44 151	50	0.55 849	9.98 402	33	5	22.5	22.0	
28	9.42 599	46	9.44 201	50	0.55 799	9.98 398	32	6	27.0	26.4	
29	9.42 644	45	9.44 250	49	0.55 750	9.98 395	31	7	31.5	30.8	
30	9.42 690	45	9.44 299	49	0.55 701	9.98 391	30	8	36.0	35.2	
31	9.42 735	46	9.44 348	49	0.55 652	9.98 388	29	9	40.5	39.6	
32	9.42 781	45	9.44 397	49	0.55 603	9.98 384	28				
33	9.42 826	45	9.44 446	50	0.55 554	9.98 381	27				
34	9.42 872	46	9.44 495	50	0.55 505	9.98 377	26		4	3	
35	9.42 917	45	9.44 544	49	0.55 456	9.98 373	25	2	0.8	0.6	
36	9.42 962	45	9.44 592	48	0.55 408	9.98 370	24	3	1.2	0.9	
37	9.43 008	46	9.44 641	49	0.55 359	9.98 366	23	4	1.6	1.2	
38	9.43 053	45	9.44 690	50	0.55 310	9.98 363	22	5	2.0	1.5	
39	9.43 098	45	9.44 738	48	0.55 262	9.98 359	21	6	2.4	1.8	
40	9.43 143	45	9.44 787	49	0.55 213	9.98 356	20	7	2.8	2.1	
41	9.43 188	45	9.44 836	48	0.55 164	9.98 352	19	8	3.2	2.4	
42	9.43 233	45	9.44 884	49	0.55 116	9.98 349	18	9	3.6	2.7	
43	9.43 278	45	9.44 933	49	0.55 067	9.98 345	17				
44	9.43 323	45	9.44 981	48	0.55 019	9.98 342	16				
45	9.43 367	44	9.45 029	48	0.54 971	9.98 338	15				
46	9.43 412	45	9.45 078	49	0.54 922	9.98 334	14				
47	9.43 457	45	9.45 126	48	0.54 874	9.98 331	13				
48	9.43 502	45	9.45 174	48	0.54 826	9.98 327	12				
49	9.43 546	44	9.45 222	48	0.54 778	9.98 324	11				
50	9.43 591	45	9.45 271	49	0.54 729	9.98 320	10				
51	9.43 635	44	9.45 319	48	0.54 681	9.98 317	9				
52	9.43 680	44	9.45 367	48	0.54 633	9.98 313	8				
53	9.43 724	45	9.45 415	48	0.54 585	9.98 309	7				
54	9.43 769	44	9.45 463	48	0.54 537	9.98 306	6				
55	9.43 813	44	9.45 511	48	0.54 489	9.98 302	5				
56	9.43 857	44	9.45 559	47	0.54 441	9.98 299	4				
57	9.43 901	45	9.45 606	48	0.54 394	9.98 295	3				
58	9.43 946	44	9.45 654	48	0.54 346	9.98 291	2				
59	9.43 990	44	9.45 702	48	0.54 298	9.98 288	1				
60	9.44 034		9.45 750		0.54 250	9.98 284	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.			

i	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.44 034		9.45 750		0.54 250	9.98 284	3	60			
1	9.44 078	44	9.45 797	47	0.54 203	9.98 281	4	59			
2	9.44 122	44	9.45 845	48	0.54 155	9.98 277	4	58	48	47	46
3	9.44 166	44	9.45 892	47	0.54 108	9.98 273	3	57	2	9.6	9.4
4	9.44 210	44	9.45 940	48	0.54 060	9.98 270	3	56	3	14.4	14.1
		43		47			4	55	4	19.2	18.8
5	9.44 253	44	9.45 987	48	0.54 013	9.98 266	4	54	5	24.0	23.5
6	9.44 297	44	9.46 035	47	0.53 965	9.98 262	3	53	6	28.8	28.2
7	9.44 341	44	9.46 082	48	0.53 918	9.98 259	4	52	7	33.6	32.9
8	9.44 385	43	9.46 130	47	0.53 870	9.98 255	4	51	8	38.4	37.6
9	9.44 428	44	9.46 177	47	0.53 823	9.98 251	3	50	9	43.2	42.3
10	9.44 472		9.46 224		0.53 776	9.98 248	4	49			
11	9.44 516	44	9.46 271	47	0.53 729	9.98 244	4	48			
12	9.44 559	43	9.46 319	48	0.53 681	9.98 240	3	47	45	44	43
13	9.44 602	44	9.46 366	47	0.53 634	9.98 237	4	46	2	9.0	8.8
14	9.44 646	44	9.46 413	47	0.53 587	9.98 233	4	45	3	13.5	13.2
		43		47			3	44	4	18.0	17.6
15	9.44 689	44	9.46 460	47	0.53 540	9.98 229	4	44	5	22.5	22.0
16	9.44 733	43	9.46 507	47	0.53 493	9.98 226	4	43	6	27.0	26.4
17	9.44 776	43	9.46 554	47	0.53 446	9.98 222	4	42	7	31.5	30.8
18	9.44 819	43	9.46 601	47	0.53 399	9.98 218	3	41	8	36.0	35.2
19	9.44 862	43	9.46 648	46	0.53 352	9.98 215	4	40	9	40.5	39.6
20	9.44 905	43	9.46 694	47	0.53 306	9.98 211	3	39			
21	9.44 948	44	9.46 741	47	0.53 259	9.98 207	4	38			
22	9.44 992	44	9.46 788	47	0.53 212	9.98 204	4	37			
23	9.45 035	43	9.46 835	46	0.53 165	9.98 200	4	36	42	41	
24	9.45 077	43	9.46 881	47	0.53 119	9.98 196	4	35	2	8.4	8.2
25	9.45 120	43	9.46 928	47	0.53 072	9.98 192	3	34	3	12.6	12.3
26	9.45 163	43	9.46 975	46	0.53 025	9.98 189	4	33	4	16.8	16.4
27	9.45 206	43	9.47 021	47	0.52 979	9.98 185	4	32	5	21.0	20.5
28	9.45 249	43	9.47 068	46	0.52 932	9.98 181	4	31	6	25.2	24.6
29	9.45 292	42	9.47 114	46	0.52 886	9.98 177	3	30	7	29.4	28.7
30	9.45 334	43	9.47 160	47	0.52 840	9.98 174	4	29	8	33.6	32.8
31	9.45 377	42	9.47 207	46	0.52 793	9.98 170	4	28	9	37.8	36.9
32	9.45 419	43	9.47 253	46	0.52 747	9.98 166	4	27			
33	9.45 462	42	9.47 299	47	0.52 701	9.98 162	3	26			
34	9.45 504	43	9.47 346	46	0.52 654	9.98 159	4	25	4	3	
35	9.45 547	42	9.47 392	46	0.52 608	9.98 155	4	24	2	0.8	0.6
36	9.45 589	43	9.47 438	46	0.52 562	9.98 151	4	23	3	1.2	0.9
37	9.45 632	42	9.47 484	46	0.52 516	9.98 147	3	22	4	1.6	1.2
38	9.45 674	42	9.47 530	46	0.52 470	9.98 144	4	21	5	2.0	1.5
39	9.45 716	42	9.47 576	46	0.52 424	9.98 140	4	20	6	2.4	1.8
40	9.45 758	43	9.47 622	46	0.52 378	9.98 136	4	19	7	2.8	2.1
41	9.45 801	42	9.47 668	46	0.52 332	9.98 132	3	18	8	3.2	2.4
42	9.45 843	42	9.47 714	46	0.52 286	9.98 129	4	17	9	3.6	2.7
43	9.45 885	42	9.47 760	46	0.52 240	9.98 125	4	16			
44	9.45 927	42	9.47 806	46	0.52 194	9.98 121	4	15			
45	9.45 969	42	9.47 852	45	0.52 148	9.98 117	3	14	From the top :		
46	9.46 011	42	9.47 897	46	0.52 103	9.98 113	4	13	For 16°+ or 196°+,		
47	9.46 053	42	9.47 943	46	0.52 057	9.98 110	4	12	read as printed; for		
48	9.46 095	41	9.47 989	46	0.52 011	9.98 106	4	11	106°+ or 286°+, read		
49	9.46 136	42	9.48 035	45	0.51 965	9.98 102	4	10	co-function.		
50	9.46 178	42	9.48 080	46	0.51 920	9.98 098	4	9			
51	9.46 220	42	9.48 126	45	0.51 874	9.98 094	4	8			
52	9.46 262	41	9.48 171	46	0.51 829	9.98 090	3	7	From the bottom :		
53	9.46 303	42	9.48 217	45	0.51 783	9.98 087	4	6	For 73°+ or 253°+,		
54	9.46 345	41	9.48 262	45	0.51 738	9.98 083	4	5	read as printed; for		
55	9.46 386	42	9.48 307	46	0.51 693	9.98 079	4	4	163°+ or 343°+, read		
56	9.46 428	41	9.48 353	45	0.51 647	9.98 075	4	3	co-function.		
57	9.46 469	42	9.48 398	45	0.51 602	9.98 071	4	2			
58	9.46 511	41	9.48 443	46	0.51 557	9.98 067	4	1			
59	9.46 552	42	9.48 489	45	0.51 511	9.98 063	3	0			
60	9.46 594		9.48 534		0.51 466	9.98 060					
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	/	Prop. Pts.		

	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.
0	9.46 594		9.48 534		0.51 466	9.98 060		60	
1	9.46 635	41	9.48 579	45	0.51 421	9.98 056	4	59	
2	9.46 676	41	9.48 624	45	0.51 376	9.98 052	4	58	45 44 43
3	9.46 717	41	9.48 669	45	0.51 331	9.98 048	4	57	2 9.0 8.8 8.6
4	9.46 758	41	9.48 714	45	0.51 286	9.98 044	4	56	3 13.5 13.2 12.9
5	9.46 800		9.48 759		0.51 241	9.98 040		55	4 18.0 17.6 17.2
6	9.46 841	41	9.48 804	45	0.51 196	9.98 036	4	54	5 22.5 22.0 21.5
7	9.46 882	41	9.48 849	45	0.51 151	9.98 032	4	53	6 27.0 26.4 25.8
8	9.46 923	41	9.48 894	45	0.51 106	9.98 029	3	52	7 31.5 30.8 30.1
9	9.46 964	41	9.48 939	45	0.51 061	9.98 025	4	51	8 36.0 35.2 34.4
10	9.47 005		9.48 984		0.51 016	9.98 021		50	9 40.5 39.6 38.7
11	9.47 045	40	9.49 029	45	0.50 971	9.98 017	4	49	
12	9.47 086	41	9.49 073	44	0.50 927	9.98 013	4	48	42 41 40
13	9.47 127	41	9.49 118	45	0.50 882	9.98 009	4	47	
14	9.47 168		9.49 163		0.50 837	9.98 005		46	2 8.4 8.2 8.0
15	9.47 209		9.49 207		0.50 793	9.98 001		45	3 12.6 12.3 12.0
16	9.47 249	40	9.49 252	45	0.50 748	9.97 997	4	44	4 16.8 16.4 16.0
17	9.47 290	41	9.49 296	44	0.50 704	9.97 993	4	43	5 21.0 20.5 20.0
18	9.47 330	40	9.49 341	45	0.50 659	9.97 989	4	42	6 25.2 24.6 24.0
19	9.47 371	41	9.49 385	44	0.50 615	9.97 986	3	41	7 29.4 28.7 28.0
20	9.47 411		9.49 430		0.50 570	9.97 982		40	8 33.6 32.8 32.0
21	9.47 452	41	9.49 474	45	0.50 526	9.97 978	4	39	9 37.8 36.9 36.0
22	9.47 492	40	9.49 519	45	0.50 481	9.97 974	4	38	
23	9.47 533	41	9.49 563	44	0.50 437	9.97 970	4	37	39 5
24	9.47 573	40	9.49 607	45	0.50 393	9.97 966	4	36	2 7.8 1.0
25	9.47 613		9.49 652		0.50 348	9.97 962		35	3 11.7 1.5
26	9.47 654	41	9.49 696	44	0.50 304	9.97 958	4	34	4 15.6 2.0
27	9.47 694	40	9.49 740	44	0.50 260	9.97 954	4	33	5 19.5 2.5
28	9.47 734	40	9.49 784	44	0.50 216	9.97 950	4	32	6 23.4 3.0
29	9.47 774	40	9.49 828	44	0.50 172	9.97 946	4	31	7 27.3 3.5
30	9.47 814		9.49 872		0.50 128	9.97 942		30	8 31.2 4.0
31	9.47 854	40	9.49 916	44	0.50 084	9.97 938	4	29	9 35.1 4.5
32	9.47 894	40	9.49 960	44	0.50 040	9.97 934	4	28	
33	9.47 934	40	9.50 004	44	0.49 996	9.97 930	4	27	
34	9.47 974	40	9.50 048	44	0.49 952	9.97 926	4	26	4 3
35	9.48 014		9.50 092		0.49 908	9.97 922		25	2 0.8 0.6
36	9.48 054	40	9.50 136	44	0.49 864	9.97 918	4	24	3 1.2 0.9
37	9.48 094	40	9.50 180	44	0.49 820	9.97 914	4	23	4 1.6 1.2
38	9.48 133	39	9.50 223	43	0.49 777	9.97 910	4	22	5 2.0 1.5
39	9.48 173	40	9.50 267	44	0.49 733	9.97 906	4	21	6 2.4 1.8
40	9.48 213		9.50 311		0.49 689	9.97 902		20	7 2.8 2.1
41	9.48 252	39	9.50 355	44	0.49 645	9.97 898	4	19	8 3.2 2.4
42	9.48 292	40	9.50 398	43	0.49 602	9.97 894	4	18	9 3.6 2.7
43	9.48 332	40	9.50 442	43	0.49 558	9.97 890	4	17	
44	9.48 371	39	9.50 485	43	0.49 515	9.97 886	4	16	
45	9.48 411		9.50 529		0.49 471	9.97 882		15	From the top:
46	9.48 450	39	9.50 572	43	0.49 428	9.97 878	4	14	
47	9.48 490	40	9.50 616	44	0.49 384	9.97 874	4	13	For 17°+ or 197°+,
48	9.48 529	39	9.50 659	43	0.49 341	9.97 870	4	12	read as printed; for
49	9.48 568	39	9.50 703	44	0.49 297	9.97 866	5	11	107°+ or 287°+, read
50	9.48 607		9.50 746		0.49 254	9.97 861		10	co-function.
51	9.48 647	40	9.50 789	43	0.49 211	9.97 857	4	9	
52	9.48 686	39	9.50 833	44	0.49 167	9.97 853	4	8	
53	9.48 725	39	9.50 876	43	0.49 124	9.97 849	4	7	From the bottom:
54	9.48 764	39	9.50 919	43	0.49 081	9.97 845	4	6	
55	9.48 803	39	9.50 962	43	0.49 038	9.97 841	4	5	For 72°+ or 252°+,
56	9.48 842	39	9.51 005	43	0.48 995	9.97 837	4	4	read as printed; for
57	9.48 881	39	9.51 048	43	0.48 952	9.97 833	4	3	162°+ or 342°+, read
58	9.48 920	39	9.51 092	44	0.48 908	9.97 829	4	2	co-function.
59	9.48 959	39	9.51 135	43	0.48 865	9.97 825	4	1	
60	9.48 998		9.51 178		0.48 822	9.97 821		0	
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.

°	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.				
0	9.48 998		9.51 178		0.48 822	9.97 821		60				
1	9.49 037	39	9.51 221	43	0.48 779	9.97 817	4	59				
2	9.49 076	39	9.51 264	43	0.48 736	9.97 812	5	58				
3	9.49 115	39	9.51 306	42	0.48 694	9.97 808	4	57				
4	9.49 153	38	9.51 349	43	0.48 651	9.97 804	4	56				
5	9.49 192	39	9.51 392	43	0.48 608	9.97 800	4	55	43	42	41	
6	9.49 231	39	9.51 435	43	0.48 565	9.97 796	4	54	2	8.6	8.4	8.2
7	9.49 269	38	9.51 478	43	0.48 522	9.97 792	4	53	3	12.9	12.6	12.3
8	9.49 308	39	9.51 520	42	0.48 480	9.97 788	4	52	4	17.2	16.8	16.4
9	9.49 347	39	9.51 563	43	0.48 437	9.97 784	4	51	5	21.5	21.0	20.5
10	9.49 385	38	9.51 606	43	0.48 394	9.97 779	5	50	6	25.8	25.2	24.6
11	9.49 424	39	9.51 648	42	0.48 352	9.97 775	4	49	7	30.1	29.4	28.7
12	9.49 462	38	9.51 691	43	0.48 309	9.97 771	4	48	8	34.4	33.6	32.8
13	9.49 500	38	9.51 734	43	0.48 266	9.97 767	4	47	9	38.7	37.8	36.9
14	9.49 539	39	9.51 776	42	0.48 224	9.97 763	4	46				
15	9.49 577	38	9.51 819	43	0.48 181	9.97 759	4	45				
16	9.49 615	38	9.51 861	42	0.48 139	9.97 754	5	44	39	38	37	
17	9.49 654	39	9.51 903	42	0.48 097	9.97 750	4	43	2	7.8	7.6	7.4
18	9.49 692	38	9.51 946	43	0.48 054	9.97 746	4	42	3	11.7	11.4	11.1
19	9.49 730	38	9.51 988	42	0.48 012	9.97 742	4	41	4	15.6	15.2	14.8
20	9.49 768	38	9.52 031	43	0.47 969	9.97 738	4	40	5	19.5	19.0	18.5
21	9.49 806	38	9.52 073	42	0.47 927	9.97 734	4	39	6	23.4	22.8	22.2
22	9.49 844	38	9.52 115	42	0.47 885	9.97 729	5	38	7	27.3	26.6	25.9
23	9.49 882	38	9.52 157	42	0.47 843	9.97 725	4	37	8	31.2	30.4	29.6
24	9.49 920	38	9.52 200	43	0.47 800	9.97 721	4	36	9	35.1	34.2	33.3
25	9.49 958	38	9.52 242	42	0.47 758	9.97 717	4	35				
26	9.49 996	38	9.52 284	42	0.47 716	9.97 713	4	34				
27	9.50 034	38	9.52 326	42	0.47 674	9.97 708	5	33		36	5	4
28	9.50 072	38	9.52 368	42	0.47 632	9.97 704	4	32				
29	9.50 110	38	9.52 410	42	0.47 590	9.97 700	4	31	2	7.2	1.0	0.8
30	9.50 148	38	9.52 452	42	0.47 548	9.97 696	4	30	3	10.8	1.5	1.2
31	9.50 185	37	9.52 494	42	0.47 506	9.97 691	5	29	4	14.4	2.0	1.6
32	9.50 223	38	9.52 536	42	0.47 464	9.97 687	4	28	5	18.0	2.5	2.0
33	9.50 261	38	9.52 578	42	0.47 422	9.97 683	4	27	6	21.6	3.0	2.4
34	9.50 298	37	9.52 620	41	0.47 380	9.97 679	4	26	7	25.2	3.5	2.8
35	9.50 336	38	9.52 661	42	0.47 339	9.97 674	5	25	8	28.8	4.0	3.2
36	9.50 374	38	9.52 703	42	0.47 297	9.97 670	4	24	9	32.4	4.5	3.6
37	9.50 411	37	9.52 745	42	0.47 255	9.97 666	4	23				
38	9.50 449	38	9.52 787	42	0.47 213	9.97 662	4	22				
39	9.50 486	37	9.52 829	41	0.47 171	9.97 657	5	21				
40	9.50 523	37	9.52 870	41	0.47 130	9.97 653	4	20				
41	9.50 561	38	9.52 912	42	0.47 088	9.97 649	4	19				
42	9.50 598	37	9.52 953	42	0.47 047	9.97 645	4	18				
43	9.50 635	37	9.52 995	42	0.47 005	9.97 640	5	17				
44	9.50 673	38	9.53 037	42	0.46 963	9.97 636	4	16				
45	9.50 710	37	9.53 078	41	0.46 922	9.97 632	4	15				
46	9.50 747	37	9.53 120	42	0.46 880	9.97 628	4	14				
47	9.50 784	37	9.53 161	41	0.46 839	9.97 623	5	13				
48	9.50 821	37	9.53 202	41	0.46 798	9.97 619	4	12				
49	9.50 858	37	9.53 244	42	0.46 756	9.97 615	4	11				
50	9.50 896	38	9.53 285	41	0.46 715	9.97 610	5	10				
51	9.50 933	37	9.53 327	42	0.46 673	9.97 606	4	9				
52	9.50 970	37	9.53 368	41	0.46 632	9.97 602	4	8				
53	9.51 007	37	9.53 409	41	0.46 591	9.97 597	5	7				
54	9.51 043	36	9.53 450	41	0.46 550	9.97 593	4	6				
55	9.51 080	37	9.53 492	42	0.46 508	9.97 589	4	5				
56	9.51 117	37	9.53 533	41	0.46 467	9.97 584	5	4				
57	9.51 154	37	9.53 574	41	0.46 426	9.97 580	4	3				
58	9.51 191	37	9.53 615	41	0.46 385	9.97 576	4	2				
59	9.51 227	36	9.53 656	41	0.46 344	9.97 571	5	1				
60	9.51 264	37	9.53 697	41	0.46 303	9.97 567	4	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

From the top:

For 18°+ or 198°+,
read as printed; for
108°+ or 288°+, read
co-function.

From the bottom:

For 71°+ or 251°+,
read as printed; for
161°+ or 341°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.			
0	9.51 264		9.53 697		0.46 303	9.97 567		60				
1	9.51 301	37	9.53 738	41	0.46 262	9.97 563	4	50				
2	9.51 338	37	9.53 779	41	0.46 221	9.97 558	5	58				
3	9.51 374	36	9.53 820	41	0.46 180	9.97 554	4	57				
4	9.51 411	36	9.53 861	41	0.46 139	9.97 550	4	56				
5	9.51 447	36	9.53 902	41	0.46 098	9.97 545	5	55		41	40	39
6	9.51 484	37	9.53 943	41	0.46 057	9.97 541	4	54	2	8.2	8.0	7.8
7	9.51 520	36	9.53 984	41	0.46 016	9.97 536	5	53	3	12.3	12.0	11.7
8	9.51 557	37	9.54 025	41	0.45 975	9.97 532	4	52	4	16.4	16.0	15.6
9	9.51 593	36	9.54 065	40	0.45 935	9.97 528	4	51	5	20.5	20.0	19.5
10	9.51 629	36	9.54 106	41	0.45 894	9.97 523	5	50	6	24.6	24.0	23.4
11	9.51 666	36	9.54 147	41	0.45 853	9.97 519	4	49	7	28.7	28.0	27.3
12	9.51 702	36	9.54 187	40	0.45 813	9.97 515	4	48	8	32.8	32.0	31.2
13	9.51 738	36	9.54 228	41	0.45 772	9.97 510	5	47	9	36.9	36.0	35.1
14	9.51 774	36	9.54 269	41	0.45 731	9.97 506	4	46				
15	9.51 811	37	9.54 309	40	0.45 691	9.97 501	5	45				
16	9.51 847	36	9.54 350	41	0.45 650	9.97 497	4	44		37	36	35
17	9.51 883	36	9.54 390	40	0.45 610	9.97 492	5	43				
18	9.51 919	36	9.54 431	41	0.45 569	9.97 488	4	42	2	7.4	7.2	7.0
19	9.51 955	36	9.54 471	40	0.45 529	9.97 484	4	41	3	11.1	10.8	10.5
20	9.51 991	36	9.54 512	41	0.45 488	9.97 479	5	40	4	14.8	14.4	14.0
21	9.52 027	36	9.54 552	40	0.45 448	9.97 475	4	39	5	18.5	18.0	17.5
22	9.52 063	36	9.54 593	41	0.45 407	9.97 470	5	38	6	22.2	21.6	21.0
23	9.52 099	36	9.54 633	40	0.45 367	9.97 466	4	37	7	25.9	25.2	24.5
24	9.52 135	36	9.54 673	41	0.45 327	9.97 461	5	36	8	29.6	28.8	28.0
25	9.52 171	36	9.54 714	40	0.45 286	9.97 457	4	35	9	33.3	32.4	31.5
26	9.52 207	36	9.54 754	40	0.45 246	9.97 453	4	34				
27	9.52 242	36	9.54 794	41	0.45 206	9.97 448	5	33		34	5	4
28	9.52 278	36	9.54 835	40	0.45 165	9.97 444	4	32				
29	9.52 314	36	9.54 875	41	0.45 125	9.97 439	5	31	2	6.8	1.0	0.8
30	9.52 350	35	9.54 915	40	0.45 085	9.97 435	4	30	3	10.2	1.5	1.2
31	9.52 385	35	9.54 955	40	0.45 045	9.97 430	5	29	4	13.6	2.0	1.6
32	9.52 421	35	9.54 995	40	0.45 005	9.97 426	4	28	5	17.0	2.5	2.0
33	9.52 456	36	9.55 035	40	0.44 965	9.97 421	5	27	6	20.4	3.0	2.4
34	9.52 492	36	9.55 075	40	0.44 925	9.97 417	4	26	7	23.8	3.5	2.8
35	9.52 527	35	9.55 115	40	0.44 885	9.97 412	5	25	8	27.2	4.0	3.2
36	9.52 563	35	9.55 155	40	0.44 845	9.97 408	4	24	9	30.6	4.5	3.6
37	9.52 598	35	9.55 195	40	0.44 805	9.97 403	5	23				
38	9.52 634	36	9.55 235	40	0.44 765	9.97 399	4	22				
39	9.52 669	36	9.55 275	40	0.44 725	9.97 394	5	21				
40	9.52 705	35	9.55 315	40	0.44 685	9.97 390	4	20				
41	9.52 740	35	9.55 355	40	0.44 645	9.97 385	5	19				
42	9.52 775	36	9.55 395	40	0.44 605	9.97 381	4	18	From the top:			
43	9.52 811	35	9.55 434	39	0.44 566	9.97 376	5	17	For 19°+ or 199°+,			
44	9.52 846	35	9.55 474	40	0.44 526	9.97 372	4	16	read as printed; for			
45	9.52 881	35	9.55 514	40	0.44 486	9.97 367	5	15	109°+ or 289°+, read			
46	9.52 916	35	9.55 554	39	0.44 446	9.97 363	4	14	co-function.			
47	9.52 951	35	9.55 593	40	0.44 407	9.97 358	5	13	From the bottom:			
48	9.52 986	35	9.55 633	40	0.44 367	9.97 353	4	12	For 70°+ or 250°+,			
49	9.53 021	35	9.55 673	39	0.44 327	9.97 349	5	11	read as printed; for			
50	9.53 056	36	9.55 712	40	0.44 288	9.97 344	4	10	160°+ or 340°+, read			
51	9.53 092	34	9.55 752	39	0.44 248	9.97 340	5	9	co-function.			
52	9.53 126	35	9.55 791	40	0.44 209	9.97 335	4	8				
53	9.53 161	35	9.55 831	39	0.44 169	9.97 331	5	7				
54	9.53 196	35	9.55 870	40	0.44 130	9.97 326	4	6				
55	9.53 231	35	9.55 910	39	0.44 090	9.97 322	5	5				
56	9.53 266	35	9.55 949	40	0.44 051	9.97 317	4	4				
57	9.53 301	35	9.55 989	39	0.44 011	9.97 312	5	3				
58	9.53 336	34	9.56 028	39	0.43 972	9.97 308	4	2				
59	9.53 370	35	9.56 067	40	0.43 933	9.97 303	5	1				
60	9.53 405		9.56 107		0.43 893	9.97 299	4	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

<i>i</i>	L Sin	<i>d</i>	L Tan	<i>c d</i>	L Ctn	L Cos	<i>d</i>	Prop. Pts.			
0	9.53 405		9.56 107		0.43 893	9.97 299	60				
1	9.53 440	35	9.56 146	39	0.43 854	9.97 294	59				
2	9.53 475	35	9.56 185	39	0.43 815	9.97 289	58				
3	9.53 509	34	9.56 224	39	0.43 776	9.97 285	57				
4	9.53 544	35	9.56 264	40	0.43 736	9.97 280	56				
5	9.53 578	34	9.56 303	39	0.43 697	9.97 276	55				
6	9.53 613	35	9.56 342	39	0.43 658	9.97 271	54	2	40	39	38
7	9.53 647	34	9.56 381	39	0.43 619	9.97 266	53	3	8.0	7.8	7.6
8	9.53 682	35	9.56 420	39	0.43 580	9.97 262	52	4	12.0	11.7	11.4
9	9.53 716	34	9.56 459	39	0.43 541	9.97 257	51	5	16.0	15.6	15.2
10	9.53 751	35	9.56 498	39	0.43 502	9.97 252	50	6	20.0	19.5	19.0
11	9.53 785	34	9.56 537	39	0.43 463	9.97 248	49	7	24.0	23.4	22.8
12	9.53 819	35	9.56 576	39	0.43 424	9.97 243	48	8	28.0	27.3	26.6
13	9.53 854	34	9.56 615	39	0.43 385	9.97 238	47	9	32.0	31.2	30.4
14	9.53 888	34	9.56 654	39	0.43 346	9.97 234	46		36.0	35.1	34.2
15	9.53 922		9.56 693		0.43 307	9.97 229	45				
16	9.53 957	35	9.56 732	39	0.43 268	9.97 224	44				
17	9.53 991	34	9.56 771	39	0.43 229	9.97 220	43				
18	9.54 025	34	9.56 810	39	0.43 190	9.97 215	42	2	37	35	34
19	9.54 059	34	9.56 849	38	0.43 151	9.97 210	41	3	7.4	7.0	6.8
20	9.54 093	34	9.56 887	39	0.43 113	9.97 206	40	4	11.1	10.5	10.2
21	9.54 127	34	9.56 926	39	0.43 074	9.97 201	39	5	14.8	14.0	13.6
22	9.54 161	34	9.56 965	39	0.43 035	9.97 196	38	6	18.5	17.5	17.0
23	9.54 195	34	9.57 004	39	0.42 996	9.97 192	37	7	22.2	21.0	20.4
24	9.54 229	34	9.57 042	38	0.42 958	9.97 187	36	8	25.9	24.5	23.8
25	9.54 263	34	9.57 081	39	0.42 919	9.97 182	35	9	29.6	28.0	27.2
26	9.54 297	34	9.57 120	38	0.42 880	9.97 178	34		33.3	31.5	30.6
27	9.54 331	34	9.57 158	39	0.42 842	9.97 173	33				
28	9.54 365	34	9.57 197	38	0.42 803	9.97 168	32				
29	9.54 399	34	9.57 235	39	0.42 765	9.97 163	31	2	33	5	4
30	9.54 433	33	9.57 274	38	0.42 726	9.97 159	30	3	6.6	1.0	0.8
31	9.54 466	34	9.57 312	39	0.42 688	9.97 154	29	4	9.9	1.5	1.2
32	9.54 500	34	9.57 351	38	0.42 649	9.97 149	28	5	13.2	2.0	1.6
33	9.54 534	34	9.57 389	39	0.42 611	9.97 145	27	6	16.5	2.5	2.0
34	9.54 567	34	9.57 428	38	0.42 572	9.97 140	26	7	19.8	3.0	2.4
35	9.54 601	34	9.57 466	38	0.42 534	9.97 135	25	8	23.1	3.5	2.8
36	9.54 635	33	9.57 504	39	0.42 496	9.97 130	24	9	26.4	4.0	3.2
37	9.54 668	34	9.57 543	38	0.42 457	9.97 126	23		29.7	4.5	3.6
38	9.54 702	33	9.57 581	39	0.42 419	9.97 121	22				
39	9.54 735	34	9.57 619	38	0.42 381	9.97 116	21				
40	9.54 769	33	9.57 658	38	0.42 342	9.97 111	20				
41	9.54 802	34	9.57 696	38	0.42 304	9.97 107	19				
42	9.54 836	33	9.57 734	38	0.42 266	9.97 102	18				
43	9.54 869	34	9.57 772	38	0.42 228	9.97 097	17				
44	9.54 903	33	9.57 810	39	0.42 190	9.97 092	16				
45	9.54 936	33	9.57 849	38	0.42 151	9.97 087	15				
46	9.54 969	34	9.57 887	38	0.42 113	9.97 083	14				
47	9.55 003	33	9.57 925	38	0.42 075	9.97 078	13				
48	9.55 036	33	9.57 963	38	0.42 037	9.97 073	12				
49	9.55 069	33	9.58 001	38	0.41 999	9.97 068	11				
50	9.55 102	34	9.58 039	38	0.41 961	9.97 063	10				
51	9.55 136	33	9.58 077	38	0.41 923	9.97 059	9				
52	9.55 169	33	9.58 115	38	0.41 885	9.97 054	8				
53	9.55 202	33	9.58 153	38	0.41 847	9.97 049	7				
54	9.55 235	33	9.58 191	38	0.41 809	9.97 044	6				
55	9.55 268	33	9.58 229	38	0.41 771	9.97 039	5				
56	9.55 301	33	9.58 267	37	0.41 733	9.97 035	4				
57	9.55 334	33	9.58 304	38	0.41 696	9.97 030	3				
58	9.55 367	33	9.58 342	38	0.41 658	9.97 025	2				
59	9.55 400	33	9.58 380	38	0.41 620	9.97 020	1				
60	9.55 433	33	9.58 418	38	0.41 582	9.97 015	0				
	L Cos	<i>d</i>	L Ctn	<i>c d</i>	L Tan	L Sin	<i>d</i>	Prop. Pts.			

'	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.
0	9.55 433	33	9.58 418	37	0.41 582	9.97 015	5	60
1	9.55 446	33	9.58 455	38	0.41 545	9.97 010	5	59
2	9.55 499	33	9.58 493	38	0.41 507	9.97 005	5	58
3	9.55 532	32	9.58 531	38	0.41 469	9.97 001	5	57
4	9.55 564	33	9.58 569	37	0.41 431	9.96 996	5	56
5	9.55 597	33	9.58 606	38	0.41 394	9.96 991	5	55
6	9.55 630	33	9.58 644	37	0.41 356	9.96 986	5	54
7	9.55 663	33	9.58 681	38	0.41 319	9.96 981	5	53
8	9.55 695	33	9.58 719	38	0.41 281	9.96 976	5	52
9	9.55 728	33	9.58 757	37	0.41 243	9.96 971	5	51
10	9.55 761	32	9.58 794	38	0.41 206	9.96 966	4	50
11	9.55 793	33	9.58 832	37	0.41 168	9.96 962	5	49
12	9.55 826	32	9.58 869	38	0.41 131	9.96 957	5	48
13	9.55 858	33	9.58 907	37	0.41 093	9.96 952	5	47
14	9.55 891	32	9.58 944	37	0.41 056	9.96 947	5	46
15	9.55 923	33	9.58 981	38	0.41 019	9.96 942	5	45
16	9.55 956	33	9.59 019	37	0.40 981	9.96 937	5	44
17	9.55 988	32	9.59 056	38	0.40 944	9.96 932	5	43
18	9.56 021	32	9.59 094	37	0.40 906	9.96 927	5	42
19	9.56 053	32	9.59 131	37	0.40 869	9.96 922	5	41
20	9.56 085	33	9.59 168	37	0.40 832	9.96 917	5	40
21	9.56 118	32	9.59 205	38	0.40 795	9.96 912	5	39
22	9.56 150	32	9.59 243	37	0.40 757	9.96 907	5	38
23	9.56 182	33	9.59 280	37	0.40 720	9.96 903	4	37
24	9.56 215	32	9.59 317	37	0.40 683	9.96 898	5	36
25	9.56 247	32	9.59 354	37	0.40 646	9.96 893	5	35
26	9.56 279	32	9.59 391	38	0.40 609	9.96 888	5	34
27	9.56 311	32	9.59 429	37	0.40 571	9.96 883	5	33
28	9.56 343	32	9.59 466	37	0.40 534	9.96 878	5	32
29	9.56 375	33	9.59 503	37	0.40 497	9.96 873	5	31
30	9.56 408	32	9.59 540	37	0.40 460	9.96 868	5	30
31	9.56 440	32	9.59 577	37	0.40 423	9.96 863	5	29
32	9.56 472	32	9.59 614	37	0.40 386	9.96 858	5	28
33	9.56 504	32	9.59 651	37	0.40 349	9.96 853	5	27
34	9.56 536	32	9.59 688	37	0.40 312	9.96 848	5	26
35	9.56 568	31	9.59 725	37	0.40 275	9.96 843	5	25
36	9.56 599	32	9.59 762	37	0.40 238	9.96 838	5	24
37	9.56 631	32	9.59 799	37	0.40 201	9.96 833	5	23
38	9.56 663	32	9.59 835	36	0.40 165	9.96 828	5	22
39	9.56 695	32	9.59 872	37	0.40 128	9.96 823	5	21
40	9.56 727	32	9.59 909	37	0.40 091	9.96 818	5	20
41	9.56 759	31	9.59 946	37	0.40 054	9.96 813	5	19
42	9.56 790	32	9.59 983	36	0.40 017	9.96 808	5	18
43	9.56 822	32	9.60 019	37	0.39 981	9.96 803	5	17
44	9.56 854	32	9.60 056	37	0.39 944	9.96 798	5	16
45	9.56 886	31	9.60 093	37	0.39 907	9.96 793	5	15
46	9.56 917	32	9.60 130	36	0.39 870	9.96 788	5	14
47	9.56 949	31	9.60 166	37	0.39 834	9.96 783	5	13
48	9.56 980	32	9.60 203	37	0.39 797	9.96 778	6	12
49	9.57 012	32	9.60 240	36	0.39 760	9.96 772	5	11
50	9.57 044	31	9.60 276	37	0.39 724	9.96 767	5	10
51	9.57 075	32	9.60 313	37	0.39 687	9.96 762	5	9
52	9.57 107	31	9.60 349	36	0.39 651	9.96 757	5	8
53	9.57 138	31	9.60 386	37	0.39 614	9.96 752	5	7
54	9.57 169	32	9.60 422	36	0.39 578	9.96 747	5	6
55	9.57 201	31	9.60 459	36	0.39 541	9.96 742	5	5
56	9.57 232	32	9.60 495	37	0.39 505	9.96 737	5	4
57	9.57 264	31	9.60 532	36	0.39 468	9.96 732	5	3
58	9.57 295	31	9.60 568	37	0.39 432	9.96 727	5	2
59	9.57 326	32	9.60 605	36	0.39 395	9.96 722	5	1
60	9.57 358		9.60 641		0.39 359	9.96 717		0
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.

38 37 36

2 7.6 7.4 7.2

3 11.4 11.1 10.8

4 15.2 14.8 14.4

5 19.0 18.5 18.0

6 22.8 22.2 21.6

7 26.6 25.9 25.2

8 30.4 29.6 28.8

9 34.2 33.3 32.4

33 32 31

2 6.6 6.4 6.2

3 9.9 9.6 9.3

4 13.2 12.8 12.4

5 16.5 16.0 15.5

6 19.8 19.2 18.6

7 23.1 22.4 21.7

8 26.4 25.6 24.8

9 29.7 28.8 27.9

6 5 4

2 1.2 1.0 0.8

3 1.8 1.5 1.2

4 2.4 2.0 1.6

5 3.0 2.5 2.0

6 3.6 3.0 2.4

7 4.2 3.5 2.8

8 4.8 4.0 3.2

9 5.4 4.5 3.6

From the top :

For 21°+ or 201°+,
read as printed ; for
111°+ or 291°+, read
co-function.

From the bottom :

For 68°+ or 248°+,
read as printed ; for
158°+ or 338°+, read
co-function.

/	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.57 358		9.60 641		0.39 359	9.96 717	60				
1	9.57 389	31	9.60 677	36	0.39 323	9.96 711	59				
2	9.57 420	31	9.60 714	37	0.39 286	9.96 706	58				
3	9.57 451	31	9.60 750	36	0.39 250	9.96 701	57				
4	9.57 482	31	9.60 786	36	0.39 214	9.96 696	56				
5	9.57 514	32	9.60 823	37	0.39 177	9.96 691	55		37	36	35
6	9.57 545	31	9.60 859	36	0.39 141	9.96 686	54	2	7.4	7.2	7.0
7	9.57 576	31	9.60 895	36	0.39 105	9.96 681	53	3	11.1	10.8	10.5
8	9.57 607	31	9.60 931	36	0.39 069	9.96 676	52	4	14.8	14.4	14.0
9	9.57 638	31	9.60 967	36	0.39 033	9.96 670	51	5	18.5	18.0	17.5
10	9.57 669	31	9.61 00	37	0.38 996	9.96 665	50	6	22.2	21.6	21.0
11	9.57 700	31	9.61 040	36	0.38 960	9.96 660	49	7	25.9	25.2	24.5
12	9.57 731	31	9.61 076	36	0.38 924	9.96 655	48	8	29.6	28.8	28.0
13	9.57 762	31	9.61 112	36	0.38 888	9.96 650	47	9	33.3	32.4	31.5
14	9.57 793	31	9.61 148	36	0.38 852	9.96 645	46				
15	9.57 824	31	9.61 184	36	0.38 816	9.96 640	45				
16	9.57 855	31	9.61 220	36	0.38 780	9.96 634	44				
17	9.57 885	30	9.61 256	36	0.38 744	9.96 629	43		32	31	30
18	9.57 916	31	9.61 292	36	0.38 708	9.96 624	42	2	6.4	6.2	6.0
19	9.57 947	31	9.61 328	36	0.38 672	9.96 619	41	3	9.6	9.3	9.0
20	9.57 978	31	9.61 364	36	0.38 636	9.96 614	40	4	12.8	12.4	12.0
21	9.58 008	30	9.61 400	36	0.38 600	9.96 608	39	5	16.0	15.5	15.0
22	9.58 039	31	9.61 436	36	0.38 564	9.96 603	38	6	19.2	18.6	18.0
23	9.58 070	31	9.61 472	36	0.38 528	9.96 598	37	7	22.4	21.7	21.0
24	9.58 101	31	9.61 508	36	0.38 492	9.96 593	36	8	25.6	24.8	24.0
25	9.58 131	30	9.61 544	36	0.38 456	9.96 588	35	9	28.8	27.9	27.0
26	9.58 162	31	9.61 579	35	0.38 421	9.96 582	34				
27	9.58 192	30	9.61 615	36	0.38 385	9.96 577	33				
28	9.58 223	31	9.61 651	36	0.38 349	9.96 572	32		29	6	5
29	9.58 253	30	9.61 687	36	0.38 313	9.96 567	31	2	5.8	1.2	1.0
30	9.58 284	31	9.61 722	35	0.38 278	9.96 562	30	3	8.7	1.8	1.5
31	9.58 314	30	9.61 758	36	0.38 242	9.96 556	29	4	11.6	2.4	2.0
32	9.58 345	31	9.61 794	36	0.38 206	9.96 551	28	5	14.5	3.0	2.5
33	9.58 375	30	9.61 830	36	0.38 170	9.96 546	27	6	17.4	3.6	3.0
34	9.58 406	31	9.61 865	35	0.38 135	9.96 541	26	7	20.3	4.2	3.5
35	9.58 436	30	9.61 901	36	0.38 099	9.96 535	25	8	23.2	4.8	4.0
36	9.58 467	31	9.61 936	35	0.38 064	9.96 530	24	9	26.1	5.4	4.5
37	9.58 497	30	9.61 972	36	0.38 028	9.96 525	23				
38	9.58 527	31	9.62 008	36	0.37 992	9.96 520	22				
39	9.58 557	30	9.62 043	35	0.37 957	9.96 514	21				
40	9.58 588	31	9.62 079	36	0.37 921	9.96 509	20				
41	9.58 618	30	9.62 114	35	0.37 886	9.96 504	19				
42	9.58 648	31	9.62 150	36	0.37 850	9.96 498	18				
43	9.58 678	30	9.62 185	35	0.37 815	9.96 493	17				
44	9.58 709	31	9.62 221	36	0.37 779	9.96 488	16				
45	9.58 739	30	9.62 256	35	0.37 744	9.96 483	15				
46	9.58 769	31	9.62 292	36	0.37 708	9.96 477	14				
47	9.58 799	30	9.62 327	35	0.37 673	9.96 472	13				
48	9.58 829	31	9.62 362	36	0.37 638	9.96 467	12				
49	9.58 859	30	9.62 398	35	0.37 602	9.96 461	11				
50	9.58 889	31	9.62 433	36	0.37 567	9.96 456	10				
51	9.58 919	30	9.62 468	35	0.37 532	9.96 451	9				
52	9.58 949	31	9.62 504	36	0.37 496	9.96 445	8				
53	9.58 979	30	9.62 539	35	0.37 461	9.96 440	7				
54	9.59 009	31	9.62 574	36	0.37 426	9.96 435	6				
55	9.59 039	30	9.62 609	35	0.37 391	9.96 429	5				
56	9.59 069	31	9.62 645	36	0.37 355	9.96 424	4				
57	9.59 098	30	9.62 680	35	0.37 320	9.96 419	3				
58	9.59 128	31	9.62 715	36	0.37 285	9.96 413	2				
59	9.59 158	30	9.62 750	35	0.37 250	9.96 408	1				
60	9.59 188	31	9.62 785	36	0.37 215	9.96 403	0				
L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

From the top:

For 22°+ or 202°+,
read as printed; for
112°+ or 292°+, read
co-function.

From the bottom:

For 67°+ or 247°+,
read as printed; for
157°+ or 337°+, read
co-function.

'	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.59 188		9.62 785		0.37 215	9.96 403					
1	9.59 218	30	9.62 820	35	0.37 180	9.96 397	6				
2	9.59 247	29	9.62 855	35	0.37 145	9.96 392	5				
3	9.59 277	30	9.62 890	35	0.37 110	9.96 387	5				
4	9.59 307	30	9.62 926	36	0.37 074	9.96 381	6				
		29		35			5				
5	9.59 336		9.62 961		0.37 039	9.96 376					
6	9.59 366	30	9.62 996	35	0.37 004	9.96 370	6				
7	9.59 396	30	9.63 031	35	0.36 969	9.96 365	5				
8	9.59 425	29	9.63 066	35	0.36 934	9.96 360	5				
9	9.59 455	30	9.63 101	35	0.36 899	9.96 354	6				
		29		34			5				
10	9.59 484		9.63 135		0.36 865	9.96 349					
11	9.59 514	30	9.63 170	35	0.36 830	9.96 343	6				
12	9.59 543	29	9.63 205	35	0.36 795	9.96 338	5				
13	9.59 573	30	9.63 240	35	0.36 760	9.96 333	5				
14	9.59 602	29	9.63 275	35	0.36 725	9.96 327	6				
		30		35			5				
15	9.59 632		9.63 310		0.36 690	9.96 322					
16	9.59 661	29	9.63 345	35	0.36 655	9.96 316	6				
17	9.59 690	29	9.63 379	34	0.36 621	9.96 311	5				
18	9.59 720	30	9.63 414	35	0.36 586	9.96 305	6				
19	9.59 749	29	9.63 449	35	0.36 551	9.96 300	5				
		29		35			4				
20	9.59 778		9.63 484		0.36 516	9.96 294					
21	9.59 808	30	9.63 519	35	0.36 481	9.96 289	5				
22	9.59 837	29	9.63 553	34	0.36 447	9.96 284	5				
23	9.59 866	29	9.63 588	35	0.36 412	9.96 278	6				
24	9.59 895	29	9.63 623	35	0.36 377	9.96 273	5				
		29		34			6				
25	9.59 924		9.63 657		0.36 343	9.96 267					
26	9.59 954	30	9.63 692	35	0.36 308	9.96 262	5				
27	9.59 983	29	9.63 726	34	0.36 274	9.96 256	6				
28	9.60 012	29	9.63 761	35	0.36 239	9.96 251	5				
29	9.60 041	29	9.63 796	35	0.36 204	9.96 245	6				
		29		34			5				
30	9.60 070		9.63 830		0.36 170	9.96 240					
31	9.60 099	29	9.63 865	35	0.36 135	9.96 234	6				
32	9.60 128	29	9.63 899	34	0.36 101	9.96 229	5				
33	9.60 157	29	9.63 934	35	0.36 066	9.96 223	6				
34	9.60 186	29	9.63 968	34	0.36 032	9.96 218	5				
		29		35			6				
35	9.60 215		9.64 003		0.35 997	9.96 212					
36	9.60 244	29	9.64 037	34	0.35 963	9.96 207	5				
37	9.60 273	29	9.64 072	35	0.35 928	9.96 201	6				
38	9.60 302	29	9.64 106	34	0.35 894	9.96 196	5				
39	9.60 331	29	9.64 140	34	0.35 860	9.96 190	6				
		28		35			5				
40	9.60 359		9.64 175		0.35 825	9.96 185					
41	9.60 388	29	9.64 209	34	0.35 791	9.96 179	6				
42	9.60 417	29	9.64 243	34	0.35 757	9.96 174	5				
43	9.60 446	29	9.64 278	35	0.35 722	9.96 168	6				
44	9.60 474	28	9.64 312	34	0.35 688	9.96 162	6				
		29		34			5				
45	9.60 503		9.64 346		0.35 654	9.96 157					
46	9.60 532	29	9.64 381	35	0.35 619	9.96 151	6				
47	9.60 561	29	9.64 415	34	0.35 585	9.96 146	5				
48	9.60 589	28	9.64 449	34	0.35 551	9.96 140	6				
49	9.60 618	29	9.64 483	34	0.35 517	9.96 135	5				
		28		34			6				
50	9.60 646		9.64 517		0.35 483	9.96 129					
51	9.60 675	29	9.64 552	35	0.35 448	9.96 123	6				
52	9.60 704	29	9.64 586	34	0.35 414	9.96 118	5				
53	9.60 732	28	9.64 620	34	0.35 380	9.96 112	6				
54	9.60 761	29	9.64 654	34	0.35 346	9.96 107	5				
		28		34			6				
55	9.60 789		9.64 688		0.35 312	9.96 101					
56	9.60 818	29	9.64 722	34	0.35 278	9.96 095	6				
57	9.60 846	28	9.64 756	34	0.35 244	9.96 090	5				
58	9.60 875	29	9.64 790	34	0.35 210	9.96 084	6				
59	9.60 903	28	9.64 824	34	0.35 176	9.96 079	5				
		28		34			6				
60	9.60 931		9.64 858		0.35 142	9.96 073					
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.			

	36	35	34
2	7.2	7.0	6.8
3	10.8	10.5	10.2
4	14.4	14.0	13.6
5	18.0	17.5	17.0
6	21.6	21.0	20.4
7	25.2	24.5	23.8
8	28.8	28.0	27.2
9	32.4	31.5	30.6

	30	29	28
2	6.0	5.8	5.6
3	9.0	8.7	8.4
4	12.0	11.6	11.2
5	15.0	14.5	14.0
6	18.0	17.4	16.8
7	21.0	20.3	19.6
8	24.0	23.2	22.4
9	27.0	26.1	25.2

	6	5
2	1.2	1.0
3	1.8	1.5
4	2.4	2.0
5	3.0	2.5
6	3.6	3.0
7	4.2	3.5
8	4.8	4.0
9	5.4	4.5

From the top :

For 23°+ or 203°+,
read as printed; for
113°+ or 293°+, read
co-function.

From the bottom :

For 66°+ or 246°+,
read as printed; for
156°+ or 336°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.60 931		9.64 858		0.35 142	9.96 073	60				
1	9.60 960	29	9.64 892	34	0.35 108	9.96 067	59				
2	9.60 988	28	9.64 926	34	0.35 074	9.96 062	58				
3	9.61 016	28	9.64 960	34	0.35 040	9.96 056	57				
4	9.61 045	29	9.64 994	34	0.35 006	9.96 050	56				
5	9.61 073	28	9.65 028	34	0.34 972	9.96 045	55				
6	9.61 101	28	9.65 062	34	0.34 938	9.96 039	54				
7	9.61 129	28	9.65 096	34	0.34 904	9.96 034	53				
8	9.61 158	29	9.65 130	34	0.34 870	9.96 028	52				
9	9.61 186	28	9.65 164	33	0.34 836	9.96 022	51				
10	9.61 214	28	9.65 197	34	0.34 803	9.96 017	50				
11	9.61 242	28	9.65 231	34	0.34 769	9.96 011	49				
12	9.61 270	28	9.65 265	34	0.34 735	9.96 005	48				
13	9.61 298	28	9.65 299	34	0.34 701	9.96 000	47				
14	9.61 326	28	9.65 333	34	0.34 667	9.95 994	46				
15	9.61 354	28	9.65 366	34	0.34 634	9.95 988	45				
16	9.61 382	28	9.65 400	34	0.34 600	9.95 982	44				
17	9.61 411	29	9.65 434	33	0.34 566	9.95 977	43				
18	9.61 438	28	9.65 467	34	0.34 533	9.95 971	42				
19	9.61 466	28	9.65 501	34	0.34 499	9.95 965	41				
20	9.61 494	28	9.65 535	33	0.34 465	9.95 960	40				
21	9.61 522	28	9.65 568	34	0.34 432	9.95 954	39				
22	9.61 550	28	9.65 602	34	0.34 398	9.95 948	38				
23	9.61 578	28	9.65 636	34	0.34 364	9.95 942	37				
24	9.61 606	28	9.65 669	33	0.34 331	9.95 937	36				
25	9.61 634	28	9.65 703	33	0.34 297	9.95 931	35				
26	9.61 662	27	9.65 736	34	0.34 264	9.95 925	34				
27	9.61 689	28	9.65 770	33	0.34 230	9.95 920	33				
28	9.61 717	28	9.65 803	33	0.34 197	9.95 914	32				
29	9.61 745	28	9.65 837	34	0.34 163	9.95 908	31				
30	9.61 773	27	9.65 870	33	0.34 130	9.95 902	30				
31	9.61 800	28	9.65 904	34	0.34 096	9.95 897	29				
32	9.61 828	28	9.65 937	34	0.34 063	9.95 891	28				
33	9.61 856	27	9.65 971	33	0.34 029	9.95 885	27				
34	9.61 883	28	9.66 004	34	0.33 996	9.95 879	26				
35	9.61 911	28	9.66 038	33	0.33 962	9.95 873	25				
36	9.61 939	27	9.66 071	33	0.33 929	9.95 868	24				
37	9.61 966	28	9.66 104	34	0.33 896	9.95 862	23				
38	9.61 994	27	9.66 138	33	0.33 862	9.95 856	22				
39	9.62 021	28	9.66 171	33	0.33 829	9.95 850	21				
40	9.62 049	27	9.66 204	34	0.33 796	9.95 844	20				
41	9.62 076	28	9.66 238	33	0.33 762	9.95 839	19				
42	9.62 104	27	9.66 271	33	0.33 729	9.95 833	18				
43	9.62 131	28	9.66 304	33	0.33 696	9.95 827	17				
44	9.62 159	27	9.66 337	34	0.33 663	9.95 821	16				
45	9.62 186	28	9.66 371	33	0.33 629	9.95 815	15				
46	9.62 214	27	9.66 404	33	0.33 596	9.95 810	14				
47	9.62 241	27	9.66 437	33	0.33 563	9.95 804	13				
48	9.62 268	28	9.66 470	33	0.33 530	9.95 798	12				
49	9.62 296	27	9.66 503	34	0.33 497	9.95 792	11				
50	9.62 323	27	9.66 537	33	0.33 463	9.95 786	10				
51	9.62 350	27	9.66 570	33	0.33 430	9.95 780	9				
52	9.62 377	28	9.66 603	33	0.33 397	9.95 775	8				
53	9.62 405	27	9.66 636	33	0.33 364	9.95 769	7				
54	9.62 432	27	9.66 669	33	0.33 331	9.95 763	6				
55	9.62 459	27	9.66 702	33	0.33 298	9.95 757	5				
56	9.62 486	27	9.66 735	33	0.33 265	9.95 751	4				
57	9.62 513	28	9.66 768	33	0.33 232	9.95 745	3				
58	9.62 541	27	9.66 801	33	0.33 199	9.95 739	2				
59	9.62 568	27	9.66 834	33	0.33 166	9.95 733	1				
60	9.62 595		9.66 867		0.33 133	9.95 728	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.			

'	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.
0	9.62 595		9.66 867		0.33 133	9.95 728		60	
1	9.62 622	27	9.66 900	33	0.33 100	9.95 722	6	59	
2	9.62 649	27	9.66 933	33	0.33 067	9.95 716	6	58	
3	9.62 676	27	9.66 966	33	0.33 034	9.95 710	6	57	
4	9.62 703	27	9.66 999	33	0.33 001	9.95 704	6	56	
5	9.62 730	27	9.67 032	33	0.32 968	9.95 698	6	55	
6	9.62 757	27	9.67 065	33	0.32 935	9.95 692	6	54	
7	9.62 784	27	9.67 098	33	0.32 902	9.95 686	6	53	
8	9.62 811	27	9.67 131	33	0.32 869	9.95 680	6	52	
9	9.62 838	27	9.67 163	32	0.32 837	9.95 674	6	51	
10	9.62 865	27	9.67 196	33	0.32 804	9.95 668	6	50	
11	9.62 892	27	9.67 229	33	0.32 771	9.95 663	5	49	
12	9.62 918	26	9.67 262	33	0.32 738	9.95 657	6	48	
13	9.62 945	27	9.67 295	33	0.32 705	9.95 651	6	47	
14	9.62 972	27	9.67 327	32	0.32 673	9.95 645	6	46	
15	9.62 999	27	9.67 360	33	0.32 640	9.95 639	6	45	
16	9.63 026	27	9.67 393	33	0.32 607	9.95 633	6	44	
17	9.63 052	26	9.67 426	33	0.32 574	9.95 627	6	43	
18	9.63 079	27	9.67 458	32	0.32 542	9.95 621	6	42	
19	9.63 106	27	9.67 491	33	0.32 509	9.95 615	6	41	
20	9.63 133	26	9.67 524	32	0.32 476	9.95 609	6	40	
21	9.63 159	27	9.67 556	33	0.32 444	9.95 603	6	39	
22	9.63 186	27	9.67 589	33	0.32 411	9.95 597	6	38	
23	9.63 213	27	9.67 622	33	0.32 378	9.95 591	6	37	
24	9.63 239	26	9.67 654	32	0.32 346	9.95 585	6	36	
25	9.63 266	27	9.67 687	33	0.32 313	9.95 579	6	35	
26	9.63 292	26	9.67 719	32	0.32 281	9.95 573	6	34	
27	9.63 319	27	9.67 752	33	0.32 248	9.95 567	6	33	
28	9.63 345	26	9.67 785	33	0.32 215	9.95 561	6	32	
29	9.63 372	27	9.67 817	32	0.32 183	9.95 555	6	31	
30	9.63 398	26	9.67 850	33	0.32 150	9.95 549	6	30	
31	9.63 425	27	9.67 882	32	0.32 118	9.95 543	6	29	
32	9.63 451	26	9.67 915	33	0.32 085	9.95 537	6	28	
33	9.63 478	27	9.67 947	32	0.32 053	9.95 531	6	27	
34	9.63 504	26	9.67 980	33	0.32 020	9.95 525	6	26	
35	9.63 531	27	9.68 012	32	0.31 988	9.95 519	6	25	
36	9.63 557	26	9.68 044	33	0.31 956	9.95 513	6	24	
37	9.63 583	27	9.68 077	32	0.31 923	9.95 507	6	23	
38	9.63 610	26	9.68 109	33	0.31 891	9.95 500	7	22	
39	9.63 636	27	9.68 142	32	0.31 858	9.95 494	6	21	
40	9.63 662	26	9.68 174	33	0.31 826	9.95 488	6	20	
41	9.63 689	27	9.68 206	32	0.31 794	9.95 482	6	19	
42	9.63 715	26	9.68 239	33	0.31 761	9.95 476	6	18	
43	9.63 741	27	9.68 271	32	0.31 729	9.95 470	6	17	
44	9.63 767	26	9.68 303	33	0.31 697	9.95 464	6	16	
45	9.63 794	27	9.68 336	32	0.31 664	9.95 458	6	15	
46	9.63 820	26	9.68 368	33	0.31 632	9.95 452	6	14	
47	9.63 846	27	9.68 400	32	0.31 600	9.95 446	6	13	
48	9.63 872	26	9.68 432	33	0.31 568	9.95 440	6	12	
49	9.63 898	27	9.68 465	32	0.31 535	9.95 434	6	11	
50	9.63 924	26	9.68 497	33	0.31 503	9.95 427	7	10	
51	9.63 950	27	9.68 529	32	0.31 471	9.95 421	6	9	
52	9.63 976	26	9.68 561	33	0.31 439	9.95 415	6	8	
53	9.64 002	27	9.68 593	32	0.31 407	9.95 409	6	7	
54	9.64 028	26	9.68 626	33	0.31 374	9.95 403	6	6	
55	9.64 054	27	9.68 658	32	0.31 342	9.95 397	6	5	
56	9.64 080	26	9.68 690	33	0.31 310	9.95 391	6	4	
57	9.64 106	27	9.68 722	32	0.31 278	9.95 384	7	3	
58	9.64 132	26	9.68 754	33	0.31 246	9.95 378	6	2	
59	9.64 158	27	9.68 786	32	0.31 214	9.95 372	6	1	
60	9.64 184	26	9.68 818	33	0.31 182	9.95 366	6	0	
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	'	Prop. Pts.

L Sin		d	L Tan		c d	L Ctn		L Cos	d	Prop. Pts.			
0	9.64 184	26	9.68 818	32	0.31 182	9.95 366	60	6	59				
1	9.64 210	26	9.68 850	32	0.31 150	9.95 360	6	6	58				
2	9.64 236	26	9.68 882	32	0.31 118	9.95 354	6	6	57				
3	9.64 262	26	9.68 914	32	0.31 086	9.95 348	7	6	56				
4	9.64 288	25	9.68 946	32	0.31 054	9.95 341	6	6	55				
5	9.64 313	26	9.68 978	32	0.31 022	9.95 335	6	6	54				
6	9.64 339	26	9.69 010	32	0.30 990	9.95 329	6	6	53				
7	9.64 365	26	9.69 042	32	0.30 958	9.95 323	6	6	52				
8	9.64 391	26	9.69 074	32	0.30 926	9.95 317	7	6	51				
9	9.64 417	25	9.69 106	32	0.30 894	9.95 310	6	6	50				
10	9.64 442	26	9.69 138	32	0.30 862	9.95 304	6	6	49				
11	9.64 468	26	9.69 170	32	0.30 830	9.95 298	6	6	48				
12	9.64 494	26	9.69 202	32	0.30 798	9.95 292	6	6	47				
13	9.64 519	25	9.69 234	32	0.30 766	9.95 286	7	6	46				
14	9.64 545	26	9.69 266	32	0.30 734	9.95 279	6	6	45				
15	9.64 571	25	9.69 298	31	0.30 702	9.95 273	6	6	44				
16	9.64 596	26	9.69 329	32	0.30 671	9.95 267	6	6	43				
17	9.64 622	25	9.69 361	32	0.30 639	9.95 261	7	6	42				
18	9.64 647	26	9.69 393	32	0.30 607	9.95 254	6	6	41				
19	9.64 673	25	9.69 425	32	0.30 575	9.95 248	6	6	40				
20	9.64 698	26	9.69 457	31	0.30 543	9.95 242	6	6	39				
21	9.64 724	25	9.69 488	32	0.30 512	9.95 236	7	6	38				
22	9.64 749	26	9.69 520	32	0.30 480	9.95 229	6	6	37				
23	9.64 775	25	9.69 552	32	0.30 448	9.95 223	6	6	36				
24	9.64 800	26	9.69 584	31	0.30 416	9.95 217	6	6	35				
25	9.64 826	25	9.69 615	32	0.30 385	9.95 211	7	6	34				
26	9.64 851	26	9.69 647	32	0.30 353	9.95 204	6	6	33				
27	9.64 877	25	9.69 679	31	0.30 321	9.95 198	6	6	32				
28	9.64 902	26	9.69 710	32	0.30 290	9.95 192	7	6	31				
29	9.64 927	25	9.69 742	32	0.30 258	9.95 185	6	6	30				
30	9.64 953	26	9.69 774	31	0.30 226	9.95 179	6	6	29				
31	9.64 978	25	9.69 805	32	0.30 195	9.95 173	6	6	28				
32	9.65 003	26	9.69 837	31	0.30 163	9.95 167	7	6	27				
33	9.65 029	25	9.69 868	32	0.30 132	9.95 160	6	6	26				
34	9.65 054	26	9.69 900	32	0.30 100	9.95 154	6	6	25				
35	9.65 079	25	9.69 932	31	0.30 068	9.95 148	7	6	24				
36	9.65 104	26	9.69 963	32	0.30 037	9.95 141	6	6	23				
37	9.65 130	25	9.69 995	31	0.30 005	9.95 135	6	6	22				
38	9.65 155	26	9.70 026	32	0.29 974	9.95 129	7	6	21				
39	9.65 180	25	9.70 058	31	0.29 942	9.95 122	6	6	20				
40	9.65 205	26	9.70 089	32	0.29 911	9.95 116	6	6	19				
41	9.65 230	25	9.70 121	31	0.29 879	9.95 110	6	6	18				
42	9.65 255	26	9.70 152	32	0.29 848	9.95 103	6	6	17				
43	9.65 281	25	9.70 184	31	0.29 816	9.95 097	6	6	16				
44	9.65 306	26	9.70 215	32	0.29 785	9.95 090	6	6	15				
45	9.65 331	25	9.70 247	31	0.29 753	9.95 084	6	6	14				
46	9.65 356	26	9.70 278	32	0.29 722	9.95 078	7	6	13				
47	9.65 381	25	9.70 309	31	0.29 691	9.95 071	6	6	12				
48	9.65 406	26	9.70 341	32	0.29 659	9.95 065	6	6	11				
49	9.65 431	25	9.70 372	31	0.29 628	9.95 059	7	6	10				
50	9.65 456	26	9.70 404	32	0.29 596	9.95 052	6	6	9				
51	9.65 481	25	9.70 435	31	0.29 565	9.95 046	7	6	8				
52	9.65 506	26	9.70 466	32	0.29 534	9.95 039	6	6	7				
53	9.65 531	25	9.70 498	31	0.29 502	9.95 033	6	6	6				
54	9.65 556	26	9.70 529	32	0.29 471	9.95 027	7	6	5				
55	9.65 580	25	9.70 560	31	0.29 440	9.95 020	6	6	4				
56	9.65 605	26	9.70 592	32	0.29 408	9.95 014	7	6	3				
57	9.65 630	25	9.70 623	31	0.29 377	9.95 007	6	6	2				
58	9.65 655	26	9.70 654	32	0.29 346	9.95 001	6	6	1				
59	9.65 680	25	9.70 685	31	0.29 315	9.94 995	7	6	0				
60	9.65 705	26	9.70 717	32	0.29 283	9.94 988	6	6	0				
L Cos		d	L Ctn		c d	L Tan		L Sin	d	Prop. Pts.			

From the top:

For 26°+ or 206°+,
read as printed; for
116°+ or 296°+, read
co-function.

From the bottom:

For 63°+ or 243°+,
read as printed; for
153°+ or 333°+, read
co-function.

<i>i</i>	L Sin	<i>d</i>	L Tan	<i>c d</i>	L Ctn	L Cos	<i>d</i>	Prop. Pts.			
0	9.65 705		9.70 717		0.29 283	9.94 988		60			
1	9.65 729	24	9.70 748	31	0.29 252	9.94 982	6				
2	9.65 754	25	9.70 779	31	0.29 221	9.94 975	7				
3	9.65 779	25	9.70 810	31	0.29 190	9.94 969	6				
4	9.65 804	25	9.70 841	31	0.29 159	9.94 962	7				
5	9.65 828	24	9.70 873	32	0.29 127	9.94 956	6				
6	9.65 853	25	9.70 904	31	0.29 096	9.94 949	7				
7	9.65 878	25	9.70 935	31	0.29 065	9.94 943	5				
8	9.65 902	24	9.70 966	31	0.29 034	9.94 936	7				
9	9.65 927	25	9.70 997	31	0.29 003	9.94 930	6				
10	9.65 952	24	9.71 028	31	0.28 972	9.94 923	7	55			
11	9.65 976	24	9.71 059	31	0.28 941	9.94 917	6				
12	9.66 001	25	9.71 090	31	0.28 910	9.94 911	6				
13	9.66 025	24	9.71 121	31	0.28 879	9.94 904	7				
14	9.66 050	25	9.71 153	32	0.28 847	9.94 898	6				
15	9.66 075	24	9.71 184	31	0.28 816	9.94 891	7				
16	9.66 099	25	9.71 215	31	0.28 785	9.94 885	6				
17	9.66 124	24	9.71 246	31	0.28 754	9.94 878	7				
18	9.66 148	25	9.71 277	31	0.28 723	9.94 871	7				
19	9.66 173	24	9.71 308	31	0.28 692	9.94 865	6				
20	9.66 197	24	9.71 339	31	0.28 661	9.94 858	7	50			
21	9.66 221	25	9.71 370	31	0.28 630	9.94 852	6				
22	9.66 246	24	9.71 401	31	0.28 599	9.94 845	7				
23	9.66 270	25	9.71 431	30	0.28 569	9.94 839	6				
24	9.66 295	25	9.71 462	31	0.28 538	9.94 832	7				
25	9.66 319	24	9.71 493	31	0.28 507	9.94 826	6				
26	9.66 343	25	9.71 524	31	0.28 476	9.94 819	7				
27	9.66 368	24	9.71 555	31	0.28 445	9.94 813	6				
28	9.66 392	24	9.71 586	31	0.28 414	9.94 806	7				
29	9.66 416	25	9.71 617	31	0.28 383	9.94 799	7				
30	9.66 441	24	9.71 648	31	0.28 352	9.94 793	6	45			
31	9.66 465	24	9.71 679	31	0.28 321	9.94 786	7				
32	9.66 489	25	9.71 709	30	0.28 291	9.94 780	6				
33	9.66 513	24	9.71 740	31	0.28 260	9.94 773	7				
34	9.66 537	24	9.71 771	31	0.28 229	9.94 767	6				
35	9.66 562	25	9.71 802	31	0.28 198	9.94 760	7				
36	9.66 586	24	9.71 833	31	0.28 167	9.94 753	7				
37	9.66 610	24	9.71 863	30	0.28 137	9.94 747	6				
38	9.66 634	24	9.71 894	31	0.28 106	9.94 740	7				
39	9.66 658	24	9.71 925	31	0.28 075	9.94 734	6				
40	9.66 682	25	9.71 955	30	0.28 045	9.94 727	7	40			
41	9.66 706	24	9.71 986	31	0.28 014	9.94 720	7				
42	9.66 731	25	9.72 017	31	0.27 983	9.94 714	6				
43	9.66 755	24	9.72 048	31	0.27 952	9.94 707	7				
44	9.66 779	24	9.72 078	30	0.27 922	9.94 700	7				
45	9.66 803	25	9.72 109	31	0.27 891	9.94 694	6				
46	9.66 827	24	9.72 140	31	0.27 860	9.94 687	7				
47	9.66 851	24	9.72 170	30	0.27 830	9.94 680	7				
48	9.66 875	24	9.72 201	31	0.27 799	9.94 674	6				
49	9.66 899	23	9.72 231	30	0.27 769	9.94 667	7				
50	9.66 922	24	9.72 262	31	0.27 738	9.94 660	7	35			
51	9.66 946	24	9.72 293	31	0.27 707	9.94 654	6				
52	9.66 970	24	9.72 323	30	0.27 677	9.94 647	7				
53	9.66 994	24	9.72 354	31	0.27 646	9.94 640	7				
54	9.67 018	24	9.72 384	30	0.27 616	9.94 634	6				
55	9.67 042	24	9.72 415	31	0.27 585	9.94 627	7				
56	9.67 066	24	9.72 445	30	0.27 555	9.94 620	7				
57	9.67 090	23	9.72 476	31	0.27 524	9.94 614	6				
58	9.67 113	24	9.72 506	30	0.27 494	9.94 607	7				
59	9.67 137	24	9.72 537	31	0.27 463	9.94 600	7				
60	9.67 161	24	9.72 567	30	0.27 433	9.94 593	7	30			
	L Cos	<i>d</i>	L Ctn	<i>c d</i>	L Tan	L Sin	<i>d</i>				

From the top :

For 27°+ or 207°+,
read as printed; for
117°+ or 297°+, read
co-function.

From the bottom :

For 62°+ or 242°+,
read as printed; for
152°+ or 332°+, read
co-function.

°	L Sin		d	L Tan		c d	L Ctn		L Cos	d	Prop. Pts.			
0	9.67 161			9.72 567			0.27 433		9.94 593		60			
1	9.67 185	24		9.72 598	31		0.27 402		9.94 587	6	59			
2	9.67 208	23		9.72 628	30		0.27 372		9.94 580	7	58			
3	9.67 232	24		9.72 659	31		0.27 341		9.94 573	7	57			
4	9.67 256	24		9.72 689	30		0.27 311		9.94 567	6	56			
		24			31					7				
5	9.67 280	23		9.72 720	30		0.27 280		9.94 560	7	55			
6	9.67 303	24		9.72 750	30		0.27 250		9.94 553	7	54			
7	9.67 327	24		9.72 780	30		0.27 220		9.94 546	6	53			
8	9.67 350	23		9.72 811	31		0.27 189		9.94 540	7	52			
9	9.67 374	24		9.72 841	30		0.27 159		9.94 533	7	51			
		24			31					7				
10	9.67 398	23		9.72 872	30		0.27 128		9.94 526	7	50			
11	9.67 421	24		9.72 902	30		0.27 098		9.94 519	6	49			
12	9.67 445	23		9.72 932	31		0.27 068		9.94 513	7	48			
13	9.67 468	24		9.72 963	30		0.27 037		9.94 506	7	47			
14	9.67 492	23		9.72 993	30		0.27 007		9.94 499	7	46			
		23			30					7				
15	9.67 515	24		9.73 023	31		0.26 977		9.94 492	7	45			
16	9.67 539	23		9.73 054	30		0.26 946		9.94 485	6	44			
17	9.67 562	24		9.73 084	30		0.26 916		9.94 479	6	43			
18	9.67 586	23		9.73 114	30		0.26 886		9.94 472	7	42			
19	9.67 609	24		9.73 144	30		0.26 856		9.94 465	7	41			
		24			31					7				
20	9.67 633	23		9.73 175	30		0.26 825		9.94 458	7	40			
21	9.67 656	24		9.73 205	30		0.26 795		9.94 451	6	39			
22	9.67 680	23		9.73 235	30		0.26 765		9.94 445	6	38			
23	9.67 703	23		9.73 265	30		0.26 735		9.94 438	7	37			
24	9.67 726	24		9.73 295	30		0.26 705		9.94 431	7	36			
		24			31					7				
25	9.67 750	23		9.73 326	30		0.26 674		9.94 424	7	35			
26	9.67 773	24		9.73 356	30		0.26 644		9.94 417	7	34			
27	9.67 796	23		9.73 386	30		0.26 614		9.94 410	6	33			
28	9.67 820	24		9.73 416	30		0.26 584		9.94 404	6	32			
29	9.67 843	23		9.73 446	30		0.26 554		9.94 397	7	31			
		24			30					7				
30	9.67 866	23		9.73 476	31		0.26 524		9.94 390	7	30			
31	9.67 890	24		9.73 507	30		0.26 493		9.94 383	7	29			
32	9.67 913	23		9.73 537	30		0.26 463		9.94 376	7	28			
33	9.67 936	23		9.73 567	30		0.26 433		9.94 369	7	27			
34	9.67 959	24		9.73 597	30		0.26 403		9.94 362	7	26			
		23			30					7				
35	9.67 982	24		9.73 627	30		0.26 373		9.94 355	6	25			
36	9.68 006	23		9.73 657	30		0.26 343		9.94 349	7	24			
37	9.68 029	24		9.73 687	30		0.26 313		9.94 342	7	23			
38	9.68 052	23		9.73 717	30		0.26 283		9.94 335	7	22			
39	9.68 075	23		9.73 747	30		0.26 253		9.94 328	7	21			
		23			30					7				
40	9.68 098	24		9.73 777	30		0.26 223		9.94 321	7	20			
41	9.68 121	23		9.73 807	30		0.26 193		9.94 314	7	19			
42	9.68 144	24		9.73 837	30		0.26 163		9.94 307	7	18			
43	9.68 167	23		9.73 867	30		0.26 133		9.94 300	7	17			
44	9.68 190	24		9.73 897	30		0.26 103		9.94 293	7	16			
		23			30					7				
45	9.68 213	24		9.73 927	30		0.26 073		9.94 286	7	15			
46	9.68 237	23		9.73 957	30		0.26 043		9.94 279	6	14			
47	9.68 260	24		9.73 987	30		0.26 013		9.94 273	7	13			
48	9.68 283	23		9.74 017	30		0.25 983		9.94 266	7	12			
49	9.68 305	22		9.74 047	30		0.25 953		9.94 259	7	11			
		23			30					7				
50	9.68 328	24		9.74 077	30		0.25 923		9.94 252	7	10			
51	9.68 351	23		9.74 107	30		0.25 893		9.94 245	9	9			
52	9.68 374	24		9.74 137	30		0.25 863		9.94 238	7	8			
53	9.68 397	23		9.74 166	29		0.25 834		9.94 231	7	7			
54	9.68 420	24		9.74 196	30		0.25 804		9.94 224	7	6			
		23			30					7				
55	9.68 443	23		9.74 226	30		0.25 774		9.94 217	7	5			
56	9.68 466	24		9.74 256	30		0.25 744		9.94 210	7	4			
57	9.68 489	23		9.74 286	30		0.25 714		9.94 203	7	3			
58	9.68 512	24		9.74 316	30		0.25 684		9.94 196	7	2			
59	9.68 534	23		9.74 345	29		0.25 655		9.94 189	7	1			
		22			30					7				
60	9.68 557	24		9.74 375	30		0.25 625		9.94 182	7	0			
	L Cos	d		L Ctn	c d		L Tan		L Sin	d		Prop. Pts.		

	31	30	29
2	6.2	6.0	5.8
3	9.3	9.0	8.7
4	12.4	12.0	11.6
5	15.5	15.0	14.5
6	18.6	18.0	17.4
7	21.7	21.0	20.3
8	24.8	24.0	23.2
9	27.9	27.0	26.1

	24	23	22
2	4.8	4.6	4.4
3	7.2	6.9	6.6
4	9.6	9.2	8.8
5	12.0	11.5	11.0
6	14.4	13.8	13.2
7	16.8	16.1	15.4
8	19.2	18.4	17.6
9	21.6	20.7	19.8

	7	6
2	1.4	1.2
3	2.1	1.8
4	2.8	2.4
5	3.5	3.0
6	4.2	3.6
7	4.9	4.2
8	5.6	4.8
9	6.3	5.4

From the top :

For 28°+ or 208°+,
read as printed; for
118°+ or 298°+, read
co-function.

From the bottom :

For 61°+ or 241°+,
read as printed; for
151°+ or 331°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.			
0	9.68 557	23	9.74 375	30	0.25 625	9.94 182	7	60				
1	9.68 580	23	9.74 405	30	0.25 595	9.94 175	7	59				
2	9.68 603	22	9.74 435	30	0.25 565	9.94 168	7	58				
3	9.68 625	23	9.74 465	30	0.25 535	9.94 161	7	57				
4	9.68 648	23	9.74 494	29	0.25 506	9.94 154	7	56				
5	9.68 671	23	9.74 524	30	0.25 476	9.94 147	7	55				
6	9.68 694	22	9.74 554	29	0.25 446	9.94 140	7	54				
7	9.68 716	23	9.74 583	30	0.25 417	9.94 133	7	53				
8	9.68 739	23	9.74 613	30	0.25 387	9.94 126	7	52				
9	9.68 762	22	9.74 643	30	0.25 357	9.94 119	7	51				
10	9.68 784	23	9.74 673	29	0.25 327	9.94 112	7	50	30	29	23	
11	9.68 807	22	9.74 702	30	0.25 298	9.94 105	7	49	6.0	5.8	4.6	
12	9.68 829	23	9.74 732	30	0.25 268	9.94 098	7	48	9.0	8.7	6.9	
13	9.68 852	23	9.74 762	29	0.25 238	9.94 090	8	47	12.0	11.6	9.2	
14	9.68 875	22	9.74 791	30	0.25 209	9.94 083	7	46	15.0	14.5	11.5	
15	9.68 897	23	9.74 821	30	0.25 179	9.94 076	7	45	18.0	17.4	13.8	
16	9.68 920	22	9.74 851	29	0.25 149	9.94 069	7	44	21.0	20.3	16.1	
17	9.68 942	23	9.74 880	30	0.25 120	9.94 062	7	43	24.0	23.2	18.4	
18	9.68 965	22	9.74 910	29	0.25 090	9.94 055	7	42	27.0	26.1	20.7	
19	9.68 987	23	9.74 939	30	0.25 061	9.94 048	7	41				
20	9.69 010	22	9.74 969	29	0.25 031	9.94 041	7	40				
21	9.69 032	23	9.74 998	30	0.25 002	9.94 034	7	39	22	8	7	
22	9.69 055	22	9.75 028	30	0.24 972	9.94 027	7	38	4.4	1.6	1.4	
23	9.69 077	23	9.75 058	30	0.24 942	9.94 020	7	37	6.6	2.4	2.1	
24	9.69 100	22	9.75 087	29	0.24 913	9.94 012	8	36	8.8	3.2	2.8	
25	9.69 122	23	9.75 117	30	0.24 883	9.94 005	7	35	11.0	4.0	3.5	
26	9.69 144	22	9.75 146	29	0.24 854	9.93 998	7	34	13.2	4.8	4.2	
27	9.69 167	23	9.75 176	30	0.24 824	9.93 991	7	33	15.4	5.6	4.9	
28	9.69 189	22	9.75 205	29	0.24 795	9.93 984	7	32	17.6	6.4	5.6	
29	9.69 212	23	9.75 235	30	0.24 765	9.93 977	7	31	19.8	7.2	6.3	
30	9.69 234	22	9.75 264	29	0.24 736	9.93 970	7	30				
31	9.69 256	23	9.75 294	30	0.24 706	9.93 963	7	29				
32	9.69 279	22	9.75 323	29	0.24 677	9.93 955	8	28				
33	9.69 301	23	9.75 353	30	0.24 647	9.93 948	7	27				
34	9.69 323	22	9.75 382	29	0.24 618	9.93 941	7	26				
35	9.69 345	23	9.75 411	30	0.24 589	9.93 934	7	25				
36	9.69 368	22	9.75 441	29	0.24 559	9.93 927	7	24				
37	9.69 390	23	9.75 470	30	0.24 530	9.93 920	7	23				
38	9.69 412	22	9.75 500	29	0.24 500	9.93 912	8	22				
39	9.69 434	23	9.75 529	30	0.24 471	9.93 905	7	21				
40	9.69 456	22	9.75 558	29	0.24 442	9.93 898	7	20				
41	9.69 479	23	9.75 588	30	0.24 412	9.93 891	7	19				
42	9.69 501	22	9.75 617	29	0.24 383	9.93 884	7	18				
43	9.69 523	23	9.75 647	30	0.24 353	9.93 876	8	17				
44	9.69 545	22	9.75 676	29	0.24 324	9.93 869	7	16				
45	9.69 567	23	9.75 705	30	0.24 295	9.93 862	7	15				
46	9.69 589	22	9.75 735	29	0.24 265	9.93 855	7	14				
47	9.69 611	23	9.75 764	30	0.24 236	9.93 847	8	13				
48	9.69 633	22	9.75 793	29	0.24 207	9.93 840	7	12				
49	9.69 655	23	9.75 822	30	0.24 178	9.93 833	7	11				
50	9.69 677	22	9.75 852	29	0.24 148	9.93 826	7	10				
51	9.69 699	23	9.75 881	30	0.24 119	9.93 819	7	9				
52	9.69 721	22	9.75 910	29	0.24 090	9.93 811	8	8				
53	9.69 743	23	9.75 939	30	0.24 061	9.93 804	7	7				
54	9.69 765	22	9.75 969	29	0.24 031	9.93 797	7	6				
55	9.69 787	23	9.75 998	30	0.24 002	9.93 789	8	5				
56	9.69 809	22	9.76 027	29	0.23 973	9.93 782	7	4				
57	9.69 831	23	9.76 056	30	0.23 944	9.93 775	7	3				
58	9.69 853	22	9.76 086	29	0.23 914	9.93 768	7	2				
59	9.69 875	23	9.76 115	30	0.23 885	9.93 760	8	1				
60	9.69 897	22	9.76 144	29	0.23 856	9.93 753	7	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

From the top:

For 29°+ or 209°+,
read as printed; for
119°+ or 299°+, read
co-function.

From the bottom:

For 60°+ or 240°+,
read as printed; for
150°+ or 330°+, read
co-function.

°	L Sin		d	L Tan		c d	L Ctn		L Cos		d	Prop. Pts.				
0	9.69 897			9.76 144			0.23 856		9.93 753			60				
1	9.69 919	22		9.76 173	29		0.23 827		9.93 746	7	59					
2	9.69 941	22		9.76 202	29		0.23 798		9.93 738	8	58					
3	9.69 963	22		9.76 231	29		0.23 769		9.93 731	7	57					
4	9.69 984	21		9.76 261	30		0.23 739		9.93 724	7	56					
5	9.70 006	22		9.76 290	29		0.23 710		9.93 717	7	55					
6	9.70 028	22		9.76 319	29		0.23 681		9.93 709	8	54	2	6.0	5.8	5.6	
7	9.70 050	22		9.76 348	29		0.23 652		9.93 702	7	53	3	9.0	8.7	8.4	
8	9.70 072	22		9.76 377	29		0.23 623		9.93 695	7	52	4	12.0	11.6	11.2	
9	9.70 093	21		9.76 406	29		0.23 594		9.93 687	8	51	5	15.0	14.5	14.0	
10	9.70 115	22		9.76 435	29		0.23 565		9.93 680	7	50	6	18.0	17.4	16.8	
11	9.70 137	22		9.76 464	29		0.23 536		9.93 673	8	49	7	21.0	20.3	19.6	
12	9.70 159	21		9.76 493	29		0.23 507		9.93 665	8	48	8	24.0	23.2	22.4	
13	9.70 180	22		9.76 522	29		0.23 478		9.93 658	7	47	9	27.0	26.1	25.2	
14	9.70 202	22		9.76 551	29		0.23 449		9.93 650	8	46					
15	9.70 224	21		9.76 580	29		0.23 420		9.93 643	7	45					
16	9.70 245	22		9.76 609	30		0.23 391		9.93 636	8	44					
17	9.70 267	22		9.76 639	29		0.23 361		9.93 628	8	43					
18	9.70 288	21		9.76 668	29		0.23 332		9.93 621	7	42	2	4.4	4.2		
19	9.70 310	22		9.76 697	28		0.23 303		9.93 614	8	41	3	6.6	6.3		
20	9.70 332	21		9.76 725	29		0.23 275		9.93 606	7	40	4	8.8	8.4		
21	9.70 353	22		9.76 754	29		0.23 246		9.93 599	8	39	5	11.0	10.5		
22	9.70 375	22		9.76 783	29		0.23 217		9.93 591	8	38	6	13.2	12.6		
23	9.70 396	21		9.76 812	29		0.23 188		9.93 584	7	37	7	15.4	14.7		
24	9.70 418	22		9.76 841	29		0.23 159		9.93 577	7	36	8	17.6	16.8		
25	9.70 439	21		9.76 870	29		0.23 130		9.93 569	8	35	9	19.8	18.9		
26	9.70 461	22		9.76 899	29		0.23 101		9.93 562	7	34					
27	9.70 482	21		9.76 928	29		0.23 072		9.93 554	8	33					
28	9.70 504	22		9.76 957	29		0.23 043		9.93 547	7	32					
29	9.70 525	21		9.76 986	29		0.23 014		9.93 539	8	31					
30	9.70 547	22		9.77 015	29		0.22 985		9.93 532	7	30					
31	9.70 568	21		9.77 044	29		0.22 956		9.93 525	8	29					
32	9.70 590	22		9.77 073	28		0.22 927		9.93 517	7	28					
33	9.70 611	21		9.77 101	29		0.22 899		9.93 510	8	27					
34	9.70 633	22		9.77 130	29		0.22 870		9.93 502	7	26					
35	9.70 654	21		9.77 159	29		0.22 841		9.93 495	8	25					
36	9.70 675	22		9.77 188	29		0.22 812		9.93 487	7	24					
37	9.70 697	21		9.77 217	29		0.22 783		9.93 480	8	23					
38	9.70 718	22		9.77 246	28		0.22 754		9.93 472	7	22					
39	9.70 739	21		9.77 274	29		0.22 726		9.93 465	8	21					
40	9.70 761	22		9.77 303	29		0.22 697		9.93 457	7	20					
41	9.70 782	21		9.77 332	29		0.22 668		9.93 450	8	19					
42	9.70 803	22		9.77 361	29		0.22 639		9.93 442	7	18					
43	9.70 824	21		9.77 390	28		0.22 610		9.93 435	8	17					
44	9.70 846	22		9.77 418	29		0.22 582		9.93 427	7	16					
45	9.70 867	21		9.77 447	29		0.22 553		9.93 420	8	15					
46	9.70 888	22		9.77 476	29		0.22 524		9.93 412	7	14					
47	9.70 909	21		9.77 505	28		0.22 495		9.93 405	8	13					
48	9.70 931	22		9.77 533	29		0.22 467		9.93 397	7	12					
49	9.70 952	21		9.77 562	29		0.22 438		9.93 390	8	11					
50	9.70 973	22		9.77 591	28		0.22 409		9.93 382	7	10					
51	9.70 994	21		9.77 619	29		0.22 381		9.93 375	8	9					
52	9.71 015	22		9.77 648	29		0.22 352		9.93 367	7	8					
53	9.71 036	21		9.77 677	29		0.22 323		9.93 360	8	7					
54	9.71 058	22		9.77 706	28		0.22 294		9.93 352	7	6					
55	9.71 079	21		9.77 734	29		0.22 266		9.93 344	8	5					
56	9.71 100	22		9.77 763	28		0.22 237		9.93 337	7	4					
57	9.71 121	21		9.77 791	29		0.22 209		9.93 329	8	3					
58	9.71 142	22		9.77 820	29		0.22 180		9.93 322	7	2					
59	9.71 163	21		9.77 849	28		0.22 151		9.93 314	8	1					
60	9.71 184	22		9.77 877	29		0.22 123		9.93 307	7	0					
	L Cos	d		L Ctn	c d		L Tan		L Sin	d						Prop. Pts.

From the top:

For 30°+ or 210°+,
read as printed: for
120°+ or 300°+, read
co-function.

From the bottom:

For 59°+ or 239°+,
read as printed; for
149°+ or 329°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.			
0	9.71 184	21	9.77 877	20	0.22 123	9.93 307	8	60				
1	9.71 205	21	9.77 906	20	0.22 094	9.93 299	8	59				
2	9.71 226	21	9.77 935	20	0.22 065	9.93 291	8	58				
3	9.71 247	21	9.77 963	28	0.22 037	9.93 284	7	57				
4	9.71 268	21	9.77 992	20	0.22 008	9.93 276	8	56				
5	9.71 289	21	9.78 020	28	0.21 980	9.93 269	7	55				
6	9.71 310	21	9.78 049	20	0.21 951	9.93 261	8	54				
7	9.71 331	21	9.78 077	28	0.21 923	9.93 253	8	53				
8	9.71 352	21	9.78 106	20	0.21 894	9.93 246	7	52				
9	9.71 373	21	9.78 135	28	0.21 865	9.93 238	8	51				
10	9.71 393	21	9.78 163	20	0.21 837	9.93 230	8	50				
11	9.71 414	21	9.78 192	28	0.21 808	9.93 223	7	49				
12	9.71 435	21	9.78 220	20	0.21 780	9.93 215	8	48				
13	9.71 456	21	9.78 249	28	0.21 751	9.93 207	8	47				
14	9.71 477	21	9.78 277	20	0.21 723	9.93 200	7	46				
15	9.71 498	21	9.78 306	28	0.21 694	9.93 192	8	45				
16	9.71 519	20	9.78 334	20	0.21 666	9.93 184	8	44				
17	9.71 539	21	9.78 363	28	0.21 637	9.93 177	7	43				
18	9.71 560	21	9.78 391	20	0.21 609	9.93 169	8	42				
19	9.71 581	21	9.78 419	28	0.21 581	9.93 161	8	41				
20	9.71 602	20	9.78 448	20	0.21 552	9.93 154	7	40				
21	9.71 622	21	9.78 476	28	0.21 524	9.93 146	8	39				
22	9.71 643	21	9.78 505	20	0.21 495	9.93 138	8	38				
23	9.71 664	21	9.78 533	28	0.21 467	9.93 131	7	37				
24	9.71 685	20	9.78 562	20	0.21 438	9.93 123	8	36				
25	9.71 705	21	9.78 590	28	0.21 410	9.93 115	8	35				
26	9.71 726	21	9.78 618	20	0.21 382	9.93 108	7	34				
27	9.71 747	21	9.78 647	28	0.21 353	9.93 100	8	33				
28	9.71 767	20	9.78 675	20	0.21 325	9.93 092	8	32				
29	9.71 788	21	9.78 704	28	0.21 296	9.93 084	7	31				
30	9.71 809	20	9.78 732	20	0.21 268	9.93 077	8	30				
31	9.71 829	21	9.78 760	28	0.21 240	9.93 069	8	29				
32	9.71 850	21	9.78 789	20	0.21 211	9.93 061	8	28				
33	9.71 870	20	9.78 817	28	0.21 183	9.93 053	8	27				
34	9.71 891	21	9.78 845	20	0.21 155	9.93 046	7	26				
35	9.71 911	20	9.78 874	28	0.21 126	9.93 038	8	25				
36	9.71 932	20	9.78 902	20	0.21 098	9.93 030	8	24				
37	9.71 952	21	9.78 930	28	0.21 070	9.93 022	8	23				
38	9.71 973	21	9.78 959	20	0.21 041	9.93 014	8	22				
39	9.71 994	20	9.78 987	28	0.21 013	9.93 007	7	21				
40	9.72 014	20	9.79 015	20	0.20 985	9.92 999	8	20				
41	9.72 034	21	9.79 043	28	0.20 957	9.92 991	8	19				
42	9.72 055	20	9.79 072	20	0.20 928	9.92 983	8	18				
43	9.72 075	20	9.79 100	28	0.20 900	9.92 976	7	17				
44	9.72 096	21	9.79 128	20	0.20 872	9.92 968	8	16				
45	9.72 116	21	9.79 156	28	0.20 844	9.92 960	8	15				
46	9.72 137	20	9.79 185	20	0.20 815	9.92 952	8	14				
47	9.72 157	20	9.79 213	28	0.20 787	9.92 944	8	13				
48	9.72 177	21	9.79 241	20	0.20 759	9.92 936	8	12				
49	9.72 198	20	9.79 269	28	0.20 731	9.92 929	7	11				
50	9.72 218	20	9.79 297	20	0.20 703	9.92 921	8	10				
51	9.72 238	21	9.79 326	28	0.20 674	9.92 913	8	9				
52	9.72 259	20	9.79 354	20	0.20 646	9.92 905	8	8				
53	9.72 279	20	9.79 382	28	0.20 618	9.92 897	8	7				
54	9.72 299	21	9.79 410	20	0.20 590	9.92 889	8	6				
55	9.72 320	20	9.79 438	28	0.20 562	9.92 881	7	5				
56	9.72 340	20	9.79 466	20	0.20 534	9.92 874	8	4				
57	9.72 360	21	9.79 495	28	0.20 505	9.92 866	8	3				
58	9.72 381	20	9.79 523	20	0.20 477	9.92 858	8	2				
59	9.72 401	20	9.79 551	28	0.20 449	9.92 850	8	1				
60	9.72 421		9.79 579		0.20 421	9.92 842		0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

2	5.8	5.6	4.2									
3	8.7	8.4	6.3									
4	11.6	11.2	8.4									
5	14.5	14.0	10.5									
6	17.4	16.8	12.6									
7	20.3	19.6	14.7									
8	23.2	22.4	16.8									
9	26.1	25.2	18.9									

2	4.0	1.6	1.4									
3	6.0	2.4	2.1									
4	8.0	3.2	2.8									
5	10.0	4.0	3.5									
6	12.0	4.8	4.2									
7	14.0	5.6	4.9									
8	16.0	6.4	5.6									
9	18.0	7.2	6.3									

From the top :

For 31°+ or 211°+,
read as printed; for
121°+ or 301°+, read
co-function.

From the bottom :

For 58°+ or 238°+,
read as printed; for
148°+ or 328°+, read
co-function.

		L Sin		d	L Tan		c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.72 421		9.79 579		0.20 421	9.92 842		60						
1	9.72 441	20	9.79 607	28	0.20 393	9.92 834	8	59						
2	9.72 461	20	9.79 635	28	0.20 365	9.92 826	8	58						
3	9.72 482	21	9.79 663	28	0.20 337	9.92 818	8	57						
4	9.72 502	20	9.79 691	28	0.20 309	9.92 810	8	56						
5	9.72 522	20	9.79 719	28	0.20 281	9.92 803	8	55						
6	9.72 542	20	9.79 747	29	0.20 253	9.92 795	8	54						
7	9.72 562	20	9.79 776	28	0.20 224	9.92 787	8	53						
8	9.72 582	20	9.79 804	28	0.20 196	9.92 779	8	52						
9	9.72 602	20	9.79 832	28	0.20 168	9.92 771	8	51						
10	9.72 622	21	9.79 860	28	0.20 140	9.92 763	8	50						
11	9.72 643	20	9.79 888	28	0.20 112	9.92 755	8	49						
12	9.72 663	20	9.79 916	28	0.20 084	9.92 747	8	48						
13	9.72 683	20	9.79 944	28	0.20 056	9.92 739	8	47						
14	9.72 703	20	9.79 972	28	0.20 028	9.92 731	8	46						
15	9.72 723	20	9.80 000	28	0.20 000	9.92 723	8	45						
16	9.72 743	20	9.80 028	28	0.19 972	9.92 715	8	44						
17	9.72 763	20	9.80 056	28	0.19 944	9.92 707	8	43						
18	9.72 783	20	9.80 084	28	0.19 916	9.92 699	8	42						
19	9.72 803	20	9.80 112	28	0.19 888	9.92 691	8	41						
20	9.72 823	20	9.80 140	28	0.19 860	9.92 683	8	40						
21	9.72 843	20	9.80 168	27	0.19 832	9.92 675	8	39						
22	9.72 863	20	9.80 195	28	0.19 805	9.92 667	8	38						
23	9.72 883	20	9.80 223	28	0.19 777	9.92 659	8	37						
24	9.72 902	20	9.80 251	28	0.19 749	9.92 651	8	36						
25	9.72 922	20	9.80 279	28	0.19 721	9.92 643	8	35						
26	9.72 942	20	9.80 307	28	0.19 693	9.92 635	8	34						
27	9.72 962	20	9.80 335	28	0.19 665	9.92 627	8	33						
28	9.72 982	20	9.80 363	28	0.19 637	9.92 619	8	32						
29	9.73 002	20	9.80 391	28	0.19 609	9.92 611	8	31						
30	9.73 022	19	9.80 419	28	0.19 581	9.92 603	8	30						
31	9.73 041	20	9.80 447	27	0.19 553	9.92 595	8	29						
32	9.73 061	20	9.80 474	27	0.19 526	9.92 587	8	28						
33	9.73 081	20	9.80 502	28	0.19 498	9.92 579	8	27						
34	9.73 101	20	9.80 530	28	0.19 470	9.92 571	8	26						
35	9.73 121	19	9.80 558	28	0.19 442	9.92 563	8	25						
36	9.73 140	20	9.80 586	28	0.19 414	9.92 555	8	24						
37	9.73 160	20	9.80 614	28	0.19 386	9.92 546	8	23						
38	9.73 180	20	9.80 642	28	0.19 358	9.92 538	8	22						
39	9.73 200	19	9.80 669	27	0.19 331	9.92 530	8	21						
40	9.73 219	20	9.80 697	28	0.19 303	9.92 522	8	20						
41	9.73 239	20	9.80 725	28	0.19 275	9.92 514	8	19						
42	9.73 259	19	9.80 753	28	0.19 247	9.92 506	8	18						
43	9.73 278	20	9.80 781	27	0.19 219	9.92 498	8	17						
44	9.73 298	20	9.80 808	28	0.19 192	9.92 490	8	16						
45	9.73 318	19	9.80 836	28	0.19 164	9.92 482	8	15						
46	9.73 337	20	9.80 864	28	0.19 136	9.92 473	8	14						
47	9.73 357	20	9.80 892	27	0.19 108	9.92 465	8	13						
48	9.73 377	19	9.80 919	28	0.19 081	9.92 457	8	12						
49	9.73 396	20	9.80 947	28	0.19 053	9.92 449	8	11						
50	9.73 416	19	9.80 975	28	0.19 025	9.92 441	8	10						
51	9.73 435	20	9.81 003	27	0.18 997	9.92 433	8	9						
52	9.73 455	19	9.81 030	28	0.18 970	9.92 425	8	8						
53	9.73 474	20	9.81 058	28	0.18 942	9.92 416	8	7						
54	9.73 494	19	9.81 086	27	0.18 914	9.92 408	8	6						
55	9.73 513	20	9.81 113	28	0.18 887	9.92 400	8	5						
56	9.73 533	19	9.81 141	28	0.18 859	9.92 392	8	4						
57	9.73 552	20	9.81 169	27	0.18 831	9.92 384	8	3						
58	9.73 572	19	9.81 196	28	0.18 804	9.92 376	8	2						
59	9.73 591	20	9.81 224	28	0.18 776	9.92 367	8	1						
60	9.73 611		9.81 252		0.18 748	9.92 359		0						
		L Cos	d		L Ctn	c d		L Tan	L Sin	d	Prop. Pts.			

	29	28	27
2	5.8	5.6	5.4
3	8.7	8.4	8.1
4	11.6	11.2	10.8
5	14.5	14.0	13.5
6	17.4	16.8	16.2
7	20.3	19.6	18.9
8	23.2	22.4	21.6
9	26.1	25.2	24.3

	21	20	19
2	4.2	4.0	3.8
3	6.3	6.0	5.7
4	8.4	8.0	7.6
5	10.5	10.0	9.5
6	12.6	12.0	11.4
7	14.7	14.0	13.3
8	16.8	16.0	15.2
9	18.9	18.0	17.1

	9	8	7
2	1.8	1.6	1.4
3	2.7	2.4	2.1
4	3.6	3.2	2.8
5	4.5	4.0	3.5
6	5.4	4.8	4.2
7	6.3	5.6	4.9
8	7.2	6.4	5.6
9	8.1	7.2	6.3

From the top:

For 32°+ or 212°+,
read as printed; for
122°+ or 302°+, read
co-function.

From the bottom:

For 57°+ or 237°+,
read as printed; for
147°+ or 327°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.
0	9.73 611	19	9.81 252		0.18 748	9.92 359	8 60	
1	9.73 630	19	9.81 279		0.18 721	9.92 351	8 59	
2	9.73 650	20	9.81 307		0.18 693	9.92 343	8 58	
3	9.73 669	19	9.81 335		0.18 665	9.92 335	8 57	
4	9.73 689	20	9.81 362		0.18 638	9.92 326	8 56	
5	9.73 708	19	9.81 390		0.18 610	9.92 318	8 55	28 27 20
6	9.73 727	20	9.81 418		0.18 582	9.92 310	8 54	2 5.4 5.4 4.0
7	9.73 747	19	9.81 445		0.18 555	9.92 302	8 53	3 4.3 4.1 3.0
8	9.73 766	19	9.81 473		0.18 527	9.92 293	8 52	4 3.2 3.0 2.0
9	9.73 785	20	9.81 500		0.18 500	9.92 285	8 51	5 2.0 1.8 1.0
10	9.73 805	19	9.81 528		0.18 472	9.92 277	8 50	6 1.8 1.6 1.0
11	9.73 824	19	9.81 556		0.18 444	9.92 269	8 49	7 1.6 1.4 1.0
12	9.73 843	20	9.81 583		0.18 417	9.92 260	8 48	8 1.4 1.2 1.0
13	9.73 863	19	9.81 611		0.18 389	9.92 252	8 47	9 1.2 1.0 1.0
14	9.73 882	19	9.81 638		0.18 362	9.92 244	8 46	
15	9.73 901	20	9.81 666		0.18 334	9.92 235	8 45	
16	9.73 921	19	9.81 693		0.18 307	9.92 227	8 44	19 18
17	9.73 940	19	9.81 721		0.18 279	9.92 219	8 43	2 3.8 3.6
18	9.73 959	19	9.81 748		0.18 252	9.92 211	8 42	3 5.7 5.4
19	9.73 978	19	9.81 776		0.18 224	9.92 202	8 41	4 7.6 7.2
20	9.73 997	20	9.81 803		0.18 197	9.92 194	8 40	5 9.5 9.0
21	9.74 017	19	9.81 831		0.18 169	9.92 186	8 39	6 11.4 10.8
22	9.74 036	19	9.81 858		0.18 142	9.92 177	8 38	7 13.3 12.6
23	9.74 055	19	9.81 886		0.18 114	9.92 169	8 37	8 15.2 14.4
24	9.74 074	19	9.81 913		0.18 087	9.92 161	8 36	9 17.1 16.2
25	9.74 093	20	9.81 941		0.18 059	9.92 152	8 35	
26	9.74 113	19	9.81 968		0.18 032	9.92 144	8 34	
27	9.74 132	19	9.81 996		0.18 004	9.92 136	8 33	
28	9.74 151	19	9.82 023		0.17 977	9.92 127	8 32	9 8
29	9.74 170	19	9.82 051		0.17 949	9.92 119	8 31	2 1.8 1.6
30	9.74 189	19	9.82 078		0.17 922	9.92 111	8 30	3 2.7 2.4
31	9.74 208	19	9.82 106		0.17 894	9.92 102	8 29	4 3.6 3.2
32	9.74 227	19	9.82 133		0.17 867	9.92 094	8 28	5 4.5 4.0
33	9.74 246	19	9.82 161		0.17 839	9.92 086	8 27	6 5.4 4.8
34	9.74 265	19	9.82 188		0.17 812	9.92 077	8 26	7 6.3 5.6
35	9.74 284	19	9.82 215		0.17 785	9.92 069	8 25	8 7.2 6.4
36	9.74 303	19	9.82 243		0.17 757	9.92 060	8 24	9 8.1 7.2
37	9.74 322	19	9.82 270		0.17 730	9.92 052	8 23	
38	9.74 341	19	9.82 298		0.17 702	9.92 044	8 22	
39	9.74 360	19	9.82 325		0.17 675	9.92 035	8 21	
40	9.74 379	19	9.82 352		0.17 648	9.92 027	8 20	
41	9.74 398	19	9.82 380		0.17 620	9.92 018	8 19	
42	9.74 417	19	9.82 407		0.17 593	9.92 010	8 18	From the top:
43	9.74 436	19	9.82 435		0.17 565	9.92 002	8 17	For 33°+ or 213°+,
44	9.74 455	19	9.82 462		0.17 537	9.91 993	8 16	read as printed; for
45	9.74 474	19	9.82 489		0.17 511	9.91 985	8 15	123°+ or 303°+, read
46	9.74 493	19	9.82 517		0.17 483	9.91 976	8 14	co-function.
47	9.74 512	19	9.82 544		0.17 456	9.91 968	8 13	
48	9.74 531	18	9.82 571		0.17 429	9.91 959	8 12	
49	9.74 549	18	9.82 599		0.17 401	9.91 951	8 11	
50	9.74 568	19	9.82 626		0.17 374	9.91 942	8 10	From the bottom:
51	9.74 587	19	9.82 653		0.17 347	9.91 934	8 9	For 56°+ or 236°+,
52	9.74 606	19	9.82 681		0.17 319	9.91 925	8 8	read as printed; for
53	9.74 625	19	9.82 708		0.17 292	9.91 917	8 7	146°+ or 326°+, read
54	9.74 644	18	9.82 735		0.17 265	9.91 908	8 6	co-function.
55	9.74 662	19	9.82 762		0.17 238	9.91 900	8 5	
56	9.74 681	19	9.82 790		0.17 210	9.91 891	8 4	
57	9.74 700	19	9.82 817		0.17 183	9.91 883	8 3	
58	9.74 719	18	9.82 844		0.17 156	9.91 874	8 2	
59	9.74 737	18	9.82 871		0.17 129	9.91 866	8 1	
60	9.74 756	19	9.82 899		0.17 101	9.91 857	8 0	
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts

											Prop. Pts.			
'	L Sin	d	L Tan	c d	L Ctn	L Cos	d							
0	9.74 756	19	9.82 899		0.17 101	9.91 857	8	60						
1	9.74 775	19	9.82 926	27	0.17 074	9.91 849	9	59						
2	9.74 794	19	9.82 953	27	0.17 047	9.91 840	9	58						
3	9.74 812	18	9.82 980	27	0.17 020	9.91 832	8	57						
4	9.74 831	19	9.83 008	28	0.16 992	9.91 823	9	56						
5	9.74 850	18	9.83 035	27	0.16 965	9.91 815	9	55	28	27	26			
6	9.74 868	18	9.83 062	27	0.16 938	9.91 806	8	54	2	5.6	5.4	5.2		
7	9.74 887	19	9.83 089	27	0.16 911	9.91 798	9	53	3	8.4	8.1	7.8		
8	9.74 906	18	9.83 117	28	0.16 883	9.91 789	9	52	4	11.2	10.8	10.4		
9	9.74 924	19	9.83 144	27	0.16 856	9.91 781	8	51	5	14.0	13.5	13.0		
10	9.74 943	19	9.83 171	27	0.16 829	9.91 772	9	50	6	16.8	16.2	15.6		
11	9.74 961	18	9.83 198	27	0.16 802	9.91 763	9	49	7	19.6	18.9	18.2		
12	9.74 980	19	9.83 225	27	0.16 775	9.91 755	8	48	8	22.4	21.6	20.8		
13	9.74 999	19	9.83 252	27	0.16 748	9.91 746	9	47	9	25.2	24.3	23.4		
14	9.75 017	18	9.83 280	28	0.16 720	9.91 738	8	46						
15	9.75 036	19	9.83 307	27	0.16 693	9.91 729	9	45						
16	9.75 054	18	9.83 334	27	0.16 666	9.91 720	8	44	19	18				
17	9.75 073	19	9.83 361	27	0.16 639	9.91 712	9	43	2	3.8	3.6			
18	9.75 091	18	9.83 388	27	0.16 612	9.91 703	9	42	3	5.7	5.4			
19	9.75 110	19	9.83 415	27	0.16 585	9.91 695	8	41	4	7.6	7.2			
20	9.75 128	18	9.83 442	27	0.16 558	9.91 686	9	40	5	9.5	9.0			
21	9.75 147	19	9.83 470	28	0.16 530	9.91 677	9	39	6	11.4	10.8			
22	9.75 165	18	9.83 497	27	0.16 503	9.91 669	8	38	7	13.3	12.6			
23	9.75 184	19	9.83 524	27	0.16 476	9.91 660	9	37	8	15.2	14.4			
24	9.75 202	18	9.83 551	27	0.16 449	9.91 651	8	36	9	17.1	16.2			
25	9.75 221	19	9.83 578	28	0.16 422	9.91 643	9	35						
26	9.75 239	18	9.83 605	27	0.16 395	9.91 634	8	34						
27	9.75 258	19	9.83 632	27	0.16 368	9.91 625	9	33	9	8				
28	9.75 276	18	9.83 659	27	0.16 341	9.91 617	8	32	2	1.8	1.6			
29	9.75 294	19	9.83 686	27	0.16 314	9.91 608	9	31	3	2.7	2.4			
30	9.75 313	18	9.83 713	27	0.16 287	9.91 599	8	30	4	3.6	3.2			
31	9.75 331	19	9.83 740	28	0.16 260	9.91 591	9	29	5	4.5	4.0			
32	9.75 350	18	9.83 768	27	0.16 232	9.91 582	8	28	6	5.4	4.8			
33	9.75 368	19	9.83 795	27	0.16 205	9.91 573	9	27	7	6.3	5.6			
34	9.75 386	18	9.83 822	27	0.16 178	9.91 565	8	26	8	7.2	6.4			
35	9.75 405	19	9.83 849	27	0.16 151	9.91 556	9	25	9	8.1	7.2			
36	9.75 423	18	9.83 876	27	0.16 124	9.91 547	8	24						
37	9.75 441	19	9.83 903	27	0.16 097	9.91 538	9	23						
38	9.75 459	18	9.83 930	27	0.16 070	9.91 530	8	22						
39	9.75 478	19	9.83 957	27	0.16 043	9.91 521	9	21						
40	9.75 496	18	9.83 984	27	0.16 016	9.91 512	8	20						
41	9.75 514	19	9.84 011	27	0.15 989	9.91 504	9	19						
42	9.75 533	18	9.84 038	27	0.15 962	9.91 495	8	18						
43	9.75 551	19	9.84 065	27	0.15 935	9.91 486	9	17						
44	9.75 569	18	9.84 092	27	0.15 908	9.91 477	8	16						
45	9.75 587	19	9.84 119	27	0.15 881	9.91 469	9	15						
46	9.75 605	18	9.84 146	27	0.15 854	9.91 460	8	14						
47	9.75 624	19	9.84 173	27	0.15 827	9.91 451	9	13						
48	9.75 642	18	9.84 200	27	0.15 800	9.91 442	8	12						
49	9.75 660	19	9.84 227	27	0.15 773	9.91 433	9	11						
50	9.75 678	18	9.84 254	26	0.15 746	9.91 425	8	10						
51	9.75 696	19	9.84 280	27	0.15 720	9.91 416	9	9						
52	9.75 714	18	9.84 307	27	0.15 693	9.91 407	8	8						
53	9.75 733	19	9.84 334	27	0.15 666	9.91 398	9	7						
54	9.75 751	18	9.84 361	27	0.15 639	9.91 389	8	6						
55	9.75 769	19	9.84 388	27	0.15 612	9.91 381	9	5						
56	9.75 787	18	9.84 415	27	0.15 585	9.91 372	8	4						
57	9.75 805	19	9.84 442	27	0.15 558	9.91 363	9	3						
58	9.75 823	18	9.84 469	27	0.15 531	9.91 354	8	2						
59	9.75 841	19	9.84 496	27	0.15 504	9.91 345	9	1						
60	9.75 859	18	9.84 523	27	0.15 477	9.91 336	8	0						
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.						

From the top:

For 34°+ or 214°+,
read as printed; for
124°+ or 304°+, read
co-function.

From the bottom:

For 55°+ or 235°+,
read as printed; for
145°+ or 325°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.				
0	9.76 922	17	9.86 126	27	0.13 874	9.90 796	9	60				
1	9.76 939	18	9.86 153	26	0.13 847	9.90 787	10	59				
2	9.76 957	17	9.86 179	27	0.13 821	9.90 777	9	58				
3	9.76 974	17	9.86 206	27	0.13 794	9.90 768	9	57				
4	9.76 991	18	9.86 232	26	0.13 768	9.90 759	9	56				
5	9.77 009	17	9.86 259	27	0.13 741	9.90 750	9	55	27	26	18	
6	9.77 026	17	9.86 285	27	0.13 715	9.90 741	10	54	2	5.4	5.2	3.6
7	9.77 043	18	9.86 312	26	0.13 688	9.90 731	9	53	3	8.1	7.8	5.4
8	9.77 061	18	9.86 338	27	0.13 662	9.90 722	9	52	4	10.8	10.4	7.2
9	9.77 078	17	9.86 365	27	0.13 635	9.90 713	9	51	5	13.5	13.0	9.0
10	9.77 095	17	9.86 392	26	0.13 608	9.90 704	10	50	6	16.2	15.6	10.8
11	9.77 112	18	9.86 418	27	0.13 582	9.90 694	9	49	7	18.9	18.2	12.6
12	9.77 130	18	9.86 445	26	0.13 555	9.90 685	9	48	8	21.6	20.8	14.4
13	9.77 147	17	9.86 471	27	0.13 529	9.90 676	9	47	9	24.3	23.4	16.2
14	9.77 164	17	9.86 498	27	0.13 502	9.90 667	10	46				
15	9.77 181	18	9.86 524	26	0.13 476	9.90 657	9	45				
16	9.77 199	18	9.86 551	26	0.13 449	9.90 648	9	44				
17	9.77 216	18	9.86 577	26	0.13 423	9.90 639	9	43	17	16		
18	9.77 233	17	9.86 603	27	0.13 397	9.90 630	9	42	2	3.4	3.2	
19	9.77 250	18	9.86 630	26	0.13 370	9.90 620	10	41	3	5.1	4.8	
20	9.77 268	18	9.86 656	26	0.13 344	9.90 611	9	40	4	6.8	6.4	
21	9.77 285	17	9.86 683	27	0.13 317	9.90 602	9	39	5	8.5	8.0	
22	9.77 302	17	9.86 709	26	0.13 291	9.90 592	10	38	6	10.2	9.6	
23	9.77 319	17	9.86 736	27	0.13 264	9.90 583	9	37	7	11.9	11.2	
24	9.77 336	17	9.86 762	26	0.13 238	9.90 574	9	36	8	13.6	12.8	
25	9.77 353	17	9.86 789	27	0.13 211	9.90 565	9	35	9	15.3	14.4	
26	9.77 370	17	9.86 815	26	0.13 185	9.90 555	10	34				
27	9.77 387	17	9.86 842	27	0.13 158	9.90 546	9	33				
28	9.77 405	18	9.86 868	26	0.13 132	9.90 537	9	32	10	9		
29	9.77 422	17	9.86 894	27	0.13 106	9.90 527	10	31	2	2.0	1.8	
30	9.77 439	17	9.86 921	26	0.13 079	9.90 518	9	30	3	3.0	2.7	
31	9.77 456	17	9.86 947	27	0.13 053	9.90 509	9	29	4	4.0	3.6	
32	9.77 473	17	9.86 974	26	0.13 026	9.90 499	10	28	5	5.0	4.5	
33	9.77 490	17	9.87 000	27	0.13 000	9.90 490	9	27	6	6.0	5.4	
34	9.77 507	17	9.87 027	26	0.12 973	9.90 480	10	26	7	7.0	6.3	
35	9.77 524	17	9.87 053	27	0.12 947	9.90 471	9	25	8	8.0	7.2	
36	9.77 541	17	9.87 079	26	0.12 921	9.90 462	9	24	9	9.0	8.1	
37	9.77 558	17	9.87 106	27	0.12 894	9.90 452	10	23				
38	9.77 575	17	9.87 132	26	0.12 868	9.90 443	9	22				
39	9.77 592	17	9.87 158	27	0.12 842	9.90 434	9	21				
40	9.77 609	17	9.87 185	26	0.12 815	9.90 424	10	20				
41	9.77 626	17	9.87 211	27	0.12 789	9.90 415	9	19	From the top :			
42	9.77 643	17	9.87 238	26	0.12 762	9.90 405	9	18	For 36°+ or 216°+,			
43	9.77 660	17	9.87 264	27	0.12 736	9.90 396	9	17	read as printed; for			
44	9.77 677	17	9.87 290	26	0.12 710	9.90 386	10	16	126°+ or 306°+, read			
45	9.77 694	17	9.87 317	27	0.12 683	9.90 377	9	15	co-function.			
46	9.77 711	17	9.87 343	26	0.12 657	9.90 368	9	14				
47	9.77 728	16	9.87 369	27	0.12 631	9.90 358	10	13				
48	9.77 744	17	9.87 396	26	0.12 604	9.90 349	9	12				
49	9.77 761	17	9.87 422	27	0.12 578	9.90 339	10	11	From the bottom :			
50	9.77 778	17	9.87 448	26	0.12 552	9.90 330	9	10	For 53°+ or 233°+,			
51	9.77 795	17	9.87 475	27	0.12 525	9.90 320	9	9	read as printed; for			
52	9.77 812	17	9.87 501	26	0.12 499	9.90 311	10	8	143°+ or 323°+, read			
53	9.77 829	17	9.87 527	27	0.12 473	9.90 301	9	7	co-function.			
54	9.77 846	16	9.87 554	26	0.12 446	9.90 292	10	6				
55	9.77 862	17	9.87 580	27	0.12 420	9.90 282	9	5				
56	9.77 879	17	9.87 606	26	0.12 394	9.90 273	9	4				
57	9.77 896	17	9.87 633	27	0.12 367	9.90 263	10	3				
58	9.77 913	17	9.87 659	26	0.12 341	9.90 254	9	2				
59	9.77 930	16	9.87 685	27	0.12 315	9.90 244	10	1				
60	9.77 946		9.87 711	26	0.12 289	9.90 235	9	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts.				

	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.			
0	9.77 946	17	9.87 711	27	0.12 289	9.90 235	10	60				
1	9.77 963	17	9.87 738	26	0.12 262	9.90 225	9	59				
2	9.77 980	17	9.87 764	26	0.12 236	9.90 216	9	58				
3	9.77 997	17	9.87 790	26	0.12 210	9.90 206	10	57				
4	9.78 013	16	9.87 817	27	0.12 183	9.90 197	9	56				
5	9.78 030	17	9.87 843	26	0.12 157	9.90 187	10	55				
6	9.78 047	17	9.87 869	26	0.12 131	9.90 178	9	54				
7	9.78 063	16	9.87 895	26	0.12 105	9.90 168	9	53				
8	9.78 080	17	9.87 922	27	0.12 078	9.90 159	9	52				
9	9.78 097	17	9.87 948	26	0.12 052	9.90 149	10	51				
10	9.78 113	16	9.87 974	26	0.12 026	9.90 139	10	50	27	26	17	
11	9.78 130	17	9.88 000	26	0.12 000	9.90 130	9	49	2	5.4	5.2	3.4
12	9.78 147	17	9.88 027	27	0.11 973	9.90 120	10	48	3	8.1	7.8	5.1
13	9.78 163	16	9.88 053	26	0.11 947	9.90 111	9	47	4	10.8	10.4	6.8
14	9.78 180	17	9.88 079	26	0.11 921	9.90 101	10	46	5	13.5	13.0	8.5
15	9.78 197	16	9.88 105	26	0.11 895	9.90 091	9	45	6	16.2	15.6	10.2
16	9.78 213	17	9.88 131	26	0.11 869	9.90 082	10	44	7	18.9	18.2	11.9
17	9.78 230	16	9.88 158	26	0.11 842	9.90 072	9	43	8	21.6	20.8	13.6
18	9.78 246	17	9.88 184	26	0.11 816	9.90 063	10	42	9	24.3	23.4	15.3
19	9.78 263	17	9.88 210	26	0.11 790	9.90 053	10	41				
20	9.78 280	16	9.88 236	26	0.11 764	9.90 043	9	40				
21	9.78 296	17	9.88 262	27	0.11 738	9.90 034	10	39				
22	9.78 313	16	9.88 289	26	0.11 711	9.90 024	10	38				
23	9.78 329	17	9.88 315	26	0.11 685	9.90 014	9	37	16	10	9	
24	9.78 346	16	9.88 341	26	0.11 659	9.90 005	10	36	2	3.2	2.0	1.8
25	9.78 362	17	9.88 367	26	0.11 633	9.89 995	10	35	3	4.8	3.0	2.7
26	9.78 379	16	9.88 393	26	0.11 607	9.89 985	9	34	4	6.4	4.0	3.6
27	9.78 395	17	9.88 420	26	0.11 580	9.89 976	10	33	5	8.0	5.0	4.5
28	9.78 412	16	9.88 446	26	0.11 554	9.89 966	9	32	6	9.6	6.0	5.4
29	9.78 428	17	9.88 472	26	0.11 528	9.89 956	10	31	7	11.2	7.0	6.3
30	9.78 445	16	9.88 498	26	0.11 502	9.89 947	9	30	8	12.8	8.0	7.2
31	9.78 461	17	9.88 524	26	0.11 476	9.89 937	10	29	9	14.4	9.0	8.1
32	9.78 478	16	9.88 550	27	0.11 450	9.89 927	9	28				
33	9.78 494	17	9.88 577	26	0.11 423	9.89 918	10	27				
34	9.78 510	16	9.88 603	26	0.11 397	9.89 908	9	26				
35	9.78 527	17	9.88 629	26	0.11 371	9.89 898	10	25				
36	9.78 543	16	9.88 655	26	0.11 345	9.89 888	9	24				
37	9.78 560	17	9.88 681	26	0.11 319	9.89 879	10	23				
38	9.78 576	16	9.88 707	26	0.11 293	9.89 869	9	22				
39	9.78 592	17	9.88 733	26	0.11 267	9.89 859	10	21				
40	9.78 609	16	9.88 759	27	0.11 241	9.89 849	9	20				
41	9.78 625	17	9.88 786	26	0.11 214	9.89 840	10	19				
42	9.78 642	16	9.88 812	26	0.11 188	9.89 830	9	18				
43	9.78 658	17	9.88 838	26	0.11 162	9.89 820	10	17				
44	9.78 674	16	9.88 864	26	0.11 136	9.89 810	9	16				
45	9.78 691	17	9.88 890	26	0.11 110	9.89 801	10	15				
46	9.78 707	16	9.88 916	26	0.11 084	9.89 791	9	14				
47	9.78 723	17	9.88 942	26	0.11 058	9.89 781	10	13				
48	9.78 739	16	9.88 968	26	0.11 032	9.89 771	9	12				
49	9.78 756	17	9.88 994	26	0.11 006	9.89 761	10	11				
50	9.78 772	16	9.89 020	26	0.10 980	9.89 752	9	10				
51	9.78 788	17	9.89 046	27	0.10 954	9.89 742	10	9				
52	9.78 805	16	9.89 073	26	0.10 927	9.89 732	9	8				
53	9.78 821	17	9.89 099	26	0.10 901	9.89 722	10	7				
54	9.78 837	16	9.89 125	26	0.10 875	9.89 712	9	6				
55	9.78 853	17	9.89 151	26	0.10 849	9.89 702	10	5				
56	9.78 869	16	9.89 177	26	0.10 823	9.89 693	9	4				
57	9.78 886	17	9.89 203	26	0.10 797	9.89 683	10	3				
58	9.78 902	16	9.89 229	26	0.10 771	9.89 673	9	2				
59	9.78 918	17	9.89 255	26	0.10 745	9.89 663	10	1				
60	9.78 934	16	9.89 281	26	0.10 719	9.89 653	9	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

From the top :

For $37^{\circ}+$ or $217^{\circ}+$,
read as printed; for
 $127^{\circ}+$ or $307^{\circ}+$, read
co-function.

From the bottom :

For $52^{\circ}+$ or $232^{\circ}+$,
read as printed; for
 $142^{\circ}+$ or $322^{\circ}+$, read
co-function.

'	L Sin		d	L Tan		c d	L Ctn		L Cos		d	Prop. Pts.				
0	9.78 934			9.89 281			0.10 719		9.89 653			60				
1	9.78 950	16		9.89 307	26		0.10 693		9.89 643	10	59					
2	9.78 967	17		9.89 333	26		0.10 667		9.89 633	10	58					
3	9.78 983	16		9.89 359	26		0.10 641		9.89 624	9	57					
4	9.78 999	16		9.89 385	26		0.10 615		9.89 614	10	56					
5	9.79 015	16		9.89 411	26		0.10 589		9.89 604	10	55	26	25	17		
6	9.79 031	16		9.89 437	26		0.10 563		9.89 594	10	54	2	5.2	5.0	3.4	
7	9.79 047	16		9.89 463	26		0.10 537		9.89 584	10	53	3	7.8	7.5	5.1	
8	9.79 063	16		9.89 489	26		0.10 511		9.89 574	10	52	4	10.4	10.0	6.8	
9	9.79 079	16		9.89 515	26		0.10 485		9.89 564	10	51	5	13.0	12.5	8.5	
10	9.79 095	16		9.89 541	26		0.10 459		9.89 554	10	50	6	15.6	15.0	10.2	
11	9.79 111	16		9.89 567	26		0.10 433		9.89 544	10	49	7	18.2	17.5	11.9	
12	9.79 128	17		9.89 593	26		0.10 407		9.89 534	10	48	8	20.8	20.0	13.6	
13	9.79 144	16		9.89 619	26		0.10 381		9.89 524	10	47	9	23.4	22.5	15.3	
14	9.79 160	16		9.89 645	26		0.10 355		9.89 514	10	46					
15	9.79 176	16		9.89 671	26		0.10 329		9.89 504	9	45					
16	9.79 192	16		9.89 697	26		0.10 303		9.89 495	10	44	16	15	11		
17	9.79 208	16		9.89 723	26		0.10 277		9.89 485	10	43					
18	9.79 224	16		9.89 749	26		0.10 251		9.89 475	10	42	2	3.2	3.0	2.2	
19	9.79 240	16		9.89 775	26		0.10 225		9.89 465	10	41	3	4.8	4.5	3.3	
20	9.79 256	16		9.89 801	26		0.10 199		9.89 455	10	40	4	6.4	6.0	4.4	
21	9.79 272	16		9.89 827	26		0.10 173		9.89 445	10	39	5	8.0	7.5	5.5	
22	9.79 288	16		9.89 853	26		0.10 147		9.89 435	10	38	6	9.6	9.0	6.6	
23	9.79 304	16		9.89 879	26		0.10 121		9.89 425	10	37	7	11.2	10.5	7.7	
24	9.79 319	15		9.89 905	26		0.10 095		9.89 415	10	36	8	12.8	12.0	8.8	
25	9.79 335	16		9.89 931	26		0.10 069		9.89 405	10	35	9	14.4	13.5	9.9	
26	9.79 351	16		9.89 957	26		0.10 043		9.89 395	10	34					
27	9.79 367	16		9.89 983	26		0.10 017		9.89 385	10	33					
28	9.79 383	16		9.90 009	26		0.09 991		9.89 375	10	32					
29	9.79 399	16		9.90 035	26		0.09 965		9.89 364	11	31					
30	9.79 415	16		9.90 061	25		0.09 939		9.89 354	10	30	2	2.0	1.8		
31	9.79 431	16		9.90 086	26		0.09 914		9.89 344	10	29	3	3.0	2.7		
32	9.79 447	16		9.90 112	26		0.09 888		9.89 334	10	28	4	4.0	3.6		
33	9.79 463	16		9.90 138	26		0.09 862		9.89 324	10	27	5	5.0	4.5		
34	9.79 478	15		9.90 164	26		0.09 836		9.89 314	10	26	6	6.0	5.4		
35	9.79 494	16		9.90 190	26		0.09 810		9.89 304	10	25	7	7.0	6.3		
36	9.79 510	16		9.90 216	26		0.09 784		9.89 294	10	24	8	8.0	7.2		
37	9.79 526	16		9.90 242	26		0.09 758		9.89 284	10	23	9	9.0	8.1		
38	9.79 542	16		9.90 268	26		0.09 732		9.89 274	10	22					
39	9.79 558	15		9.90 294	26		0.09 706		9.89 264	10	21					
40	9.79 573	16		9.90 320	26		0.09 680		9.89 254	10	20					
41	9.79 589	16		9.90 346	25		0.09 654		9.89 244	10	19					
42	9.79 605	16		9.90 371	26		0.09 629		9.89 233	10	18					
43	9.79 621	16		9.90 397	26		0.09 603		9.89 223	10	17					
44	9.79 636	15		9.90 423	26		0.09 577		9.89 213	10	16					
45	9.79 652	16		9.90 449	26		0.09 551		9.89 203	10	15					
46	9.79 668	16		9.90 475	26		0.09 525		9.89 193	10	14					
47	9.79 684	15		9.90 501	26		0.09 499		9.89 183	10	13					
48	9.79 699	16		9.90 527	26		0.09 473		9.89 173	10	12					
49	9.79 715	16		9.90 553	25		0.09 447		9.89 162	11	11					
50	9.79 731	15		9.90 578	26		0.09 422		9.89 152	10	10					
51	9.79 746	16		9.90 604	26		0.09 396		9.89 142	10	9					
52	9.79 762	16		9.90 630	26		0.09 370		9.89 132	10	8					
53	9.79 778	16		9.90 656	26		0.09 344		9.89 122	10	7					
54	9.79 793	15		9.90 682	26		0.09 318		9.89 112	10	6					
55	9.79 809	16		9.90 708	26		0.09 292		9.89 101	10	5					
56	9.79 825	15		9.90 734	25		0.09 266		9.89 091	10	4					
57	9.79 840	16		9.90 759	26		0.09 241		9.89 081	10	3					
58	9.79 856	16		9.90 785	26		0.09 215		9.89 071	10	2					
59	9.79 872	15		9.90 811	26		0.09 189		9.89 060	10	1					
60	9.79 887			9.90 837			0.09 163		9.89 050		0					
	L Cos	d		L Ctn	c d		L Tan		L Sin	d	'	Prop. Pts.				

'	L Sin	d	L Tan	c d	L Ctn	L Cos	d		Prop. Pts.			
0	9.79 887		9.90 837		0.09 163	9.89 050		60				
1	9.79 903	16	9.90 863	26	0.09 137	9.89 040	10	59				
2	9.79 918	15	9.90 889	26	0.09 111	9.89 030	10	58				
3	9.79 934	16	9.90 914	25	0.09 086	9.89 020	10	57				
4	9.79 950	16	9.90 940	26	0.09 060	9.89 009	11	56				
5	9.79 965	15	9.90 966	26	0.09 034	9.88 999	10	55				
6	9.79 981	16	9.90 992	26	0.09 008	9.88 989	10	54				
7	9.79 996	15	9.91 018	26	0.08 982	9.88 978	11	53				
8	9.80 012	16	9.91 043	25	0.08 957	9.88 968	10	52				
9	9.80 027	15	9.91 069	26	0.08 931	9.88 958	10	51				
10	9.80 043	16	9.91 095	26	0.08 905	9.88 948	10	50		26	25	16
11	9.80 058	15	9.91 121	26	0.08 879	9.88 937	11	49	2	5.2	5.0	3.2
12	9.80 074	16	9.91 147	26	0.08 853	9.88 927	10	48	3	7.8	7.5	4.8
13	9.80 089	15	9.91 172	25	0.08 828	9.88 917	10	47	4	10.4	10.0	6.4
14	9.80 105	16	9.91 198	26	0.08 802	9.88 906	11	46	5	13.0	12.5	8.0
15	9.80 120	15	9.91 224	26	0.08 776	9.88 896	10	45	6	15.6	15.0	9.6
16	9.80 136	16	9.91 250	26	0.08 750	9.88 886	10	44	7	18.2	17.5	11.2
17	9.80 151	15	9.91 276	26	0.08 724	9.88 875	11	43	8	20.8	20.0	12.8
18	9.80 166	16	9.91 301	25	0.08 699	9.88 865	10	42	9	23.4	22.5	14.4
19	9.80 182	15	9.91 327	26	0.08 673	9.88 855	10	41				
20	9.80 197	16	9.91 353	26	0.08 647	9.88 844	11	40				
21	9.80 213	15	9.91 379	26	0.08 621	9.88 834	10	39				
22	9.80 228	16	9.91 404	25	0.08 596	9.88 824	10	38				
23	9.80 244	15	9.91 430	26	0.08 570	9.88 813	11	37		15	11	10
24	9.80 259	16	9.91 456	26	0.08 544	9.88 803	10	36	2	3.0	2.2	2.0
25	9.80 274	15	9.91 482	26	0.08 518	9.88 793	10	35	3	4.5	3.3	3.0
26	9.80 290	16	9.91 507	25	0.08 493	9.88 782	11	34	4	6.0	4.4	4.0
27	9.80 305	15	9.91 533	26	0.08 467	9.88 772	10	33	5	7.5	5.5	5.0
28	9.80 320	16	9.91 559	26	0.08 441	9.88 761	11	32	6	9.0	6.6	6.0
29	9.80 336	15	9.91 585	26	0.08 415	9.88 751	10	31	7	10.5	7.7	7.0
30	9.80 351	16	9.91 610	25	0.08 390	9.88 741	10	30	8	12.0	8.8	8.0
31	9.80 366	15	9.91 636	26	0.08 364	9.88 730	11	29	9	13.5	9.9	9.0
32	9.80 382	16	9.91 662	26	0.08 338	9.88 720	10	28				
33	9.80 397	15	9.91 688	26	0.08 312	9.88 709	11	27				
34	9.80 412	16	9.91 713	25	0.08 287	9.88 699	10	26				
35	9.80 428	15	9.91 739	26	0.08 261	9.88 688	11	25				
36	9.80 443	16	9.91 765	26	0.08 235	9.88 678	10	24				
37	9.80 458	15	9.91 791	26	0.08 209	9.88 668	10	23				
38	9.80 473	16	9.91 816	25	0.08 184	9.88 657	11	22				
39	9.80 489	15	9.91 842	26	0.08 158	9.88 647	10	21				
40	9.80 504	16	9.91 868	26	0.08 132	9.88 636	11	20				
41	9.80 519	15	9.91 893	25	0.08 107	9.88 626	10	19				
42	9.80 534	16	9.91 919	26	0.08 081	9.88 615	11	18				
43	9.80 550	15	9.91 945	26	0.08 055	9.88 605	10	17				
44	9.80 565	16	9.91 971	25	0.08 029	9.88 594	11	16				
45	9.80 580	15	9.91 996	26	0.08 004	9.88 584	10	15				
46	9.80 595	16	9.92 022	26	0.07 978	9.88 573	11	14				
47	9.80 610	15	9.92 048	26	0.07 952	9.88 563	10	13				
48	9.80 625	16	9.92 073	25	0.07 927	9.88 552	11	12				
49	9.80 641	15	9.92 099	26	0.07 901	9.88 542	10	11				
50	9.80 656	16	9.92 125	26	0.07 875	9.88 531	11	10				
51	9.80 671	15	9.92 150	25	0.07 850	9.88 521	10	9				
52	9.80 686	16	9.92 176	26	0.07 824	9.88 510	11	8				
53	9.80 701	15	9.92 202	26	0.07 798	9.88 499	10	7				
54	9.80 716	16	9.92 227	25	0.07 773	9.88 489	11	6				
55	9.80 731	15	9.92 253	26	0.07 747	9.88 478	10	5				
56	9.80 746	16	9.92 279	26	0.07 721	9.88 468	11	4				
57	9.80 762	15	9.92 304	25	0.07 696	9.88 457	10	3				
58	9.80 777	16	9.92 330	26	0.07 670	9.88 447	11	2				
59	9.80 792	15	9.92 356	26	0.07 644	9.88 436	10	1				
60	9.80 807	16	9.92 381	25	0.07 619	9.88 425	11	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

°	L Sin		d	L Tan		c d	L Ctn		L Cos		d	Prop. Pts.			
0	9.80 807		15	9.92 381		26	0.07 619		9.88 425		10	60			
1	9.80 822		15	9.92 407		26	0.07 593		9.88 415		11	59			
2	9.80 837		15	9.92 433		25	0.07 567		9.88 404		10	58			
3	9.80 852		15	9.92 458		26	0.07 542		9.88 394		11	57			
4	9.80 867		15	9.92 484		26	0.07 516		9.88 383		11	56			
5	9.80 882		15	9.92 510		25	0.07 490		9.88 372		10	55			
6	9.80 897		15	9.92 535		26	0.07 465		9.88 362		11	54			
7	9.80 912		15	9.92 561		26	0.07 439		9.88 351		11	53			
8	9.80 927		15	9.92 587		25	0.07 413		9.88 340		10	52			
9	9.80 942		15	9.92 612		26	0.07 388		9.88 330		11	51			
10	9.80 957		15	9.92 638		25	0.07 362		9.88 319		11	50	26	25	15
11	9.80 972		15	9.92 663		26	0.07 337		9.88 308		10	49	2	5.2	3.0
12	9.80 987		15	9.92 689		26	0.07 311		9.88 298		11	48	3	7.8	4.5
13	9.81 002		15	9.92 715		25	0.07 285		9.88 287		11	47	4	10.4	6.0
14	9.81 017		15	9.92 740		26	0.07 260		9.88 276		10	46	5	13.0	7.5
15	9.81 032		15	9.92 766		26	0.07 234		9.88 266		11	45	6	15.6	9.0
16	9.81 047		15	9.92 792		25	0.07 208		9.88 255		11	44	7	18.2	10.5
17	9.81 061		14	9.92 817		26	0.07 183		9.88 244		11	43	8	20.8	12.0
18	9.81 076		15	9.92 843		25	0.07 157		9.88 234		10	42	9	23.4	13.5
19	9.81 091		15	9.92 868		26	0.07 132		9.88 223		11	41			
20	9.81 106		15	9.92 894		26	0.07 106		9.88 212		11	40			
21	9.81 121		15	9.92 920		25	0.07 080		9.88 201		10	39			
22	9.81 136		15	9.92 945		26	0.07 055		9.88 191		11	38	14	11	10
23	9.81 151		15	9.92 971		25	0.07 029		9.88 180		11	37	2	2.8	2.0
24	9.81 166		14	9.92 996		26	0.07 004		9.88 169		11	36	3	4.2	3.0
25	9.81 180		15	9.93 022		26	0.06 978		9.88 158		10	35	4	5.6	4.0
26	9.81 195		15	9.93 048		25	0.06 952		9.88 148		11	34	5	7.0	5.0
27	9.81 210		15	9.93 073		26	0.06 927		9.88 137		11	33	6	8.4	6.0
28	9.81 225		15	9.93 099		25	0.06 901		9.88 126		11	32	7	9.8	7.0
29	9.81 240		14	9.93 124		26	0.06 876		9.88 115		10	31	8	11.2	8.0
30	9.81 254		15	9.93 150		25	0.06 850		9.88 105		11	30	9	12.6	9.0
31	9.81 269		15	9.93 175		26	0.06 825		9.88 094		11	29			
32	9.81 284		15	9.93 201		26	0.06 799		9.88 083		11	28			
33	9.81 299		15	9.93 227		25	0.06 773		9.88 072		11	27			
34	9.81 314		14	9.93 252		26	0.06 748		9.88 061		10	26			
35	9.81 328		15	9.93 278		25	0.06 722		9.88 051		11	25			
36	9.81 343		15	9.93 303		26	0.06 697		9.88 040		11	24			
37	9.81 358		15	9.93 329		25	0.06 671		9.88 029		11	23			
38	9.81 372		15	9.93 354		26	0.06 646		9.88 018		11	22			
39	9.81 387		15	9.93 380		26	0.06 620		9.88 007		11	21			
40	9.81 402		15	9.93 406		25	0.06 594		9.87 996		11	20			
41	9.81 417		14	9.93 431		25	0.06 569		9.87 985		10	19			
42	9.81 431		15	9.93 457		25	0.06 543		9.87 975		11	18			
43	9.81 446		15	9.93 482		26	0.06 518		9.87 964		11	17			
44	9.81 461		14	9.93 508		25	0.06 492		9.87 953		11	16			
45	9.81 475		15	9.93 533		26	0.06 467		9.87 942		11	15			
46	9.81 490		15	9.93 559		25	0.06 441		9.87 931		11	14			
47	9.81 505		14	9.93 584		26	0.06 416		9.87 920		11	13			
48	9.81 519		15	9.93 610		26	0.06 390		9.87 909		11	12			
49	9.81 534		15	9.93 636		25	0.06 364		9.87 898		11	11			
50	9.81 549		14	9.93 661		26	0.06 339		9.87 887		10	10			
51	9.81 563		15	9.93 687		25	0.06 313		9.87 877		11	9			
52	9.81 578		14	9.93 712		26	0.06 288		9.87 866		11	8			
53	9.81 592		15	9.93 738		25	0.06 262		9.87 855		11	7			
54	9.81 607		15	9.93 763		26	0.06 237		9.87 844		11	6			
55	9.81 622		14	9.93 789		25	0.06 211		9.87 833		11	5			
56	9.81 636		15	9.93 814		26	0.06 186		9.87 822		11	4			
57	9.81 651		14	9.93 840		25	0.06 160		9.87 811		11	3			
58	9.81 665		15	9.93 865		26	0.06 135		9.87 800		11	2			
59	9.81 680		14	9.93 891		25	0.06 109		9.87 789		11	1			
60	9.81 694		14	9.93 916			0.06 084		9.87 778			0			
	L Cos	d		L Ctn	c d		L Tan		L Sin	d		Prop. Pts.			

From the top :

For 40°+ or 220°+,
read as printed; for
130°+ or 310°+, read
co-function.

From the bottom :

For 49°+ or 229°+,
read as printed; for
139°+ or 319°+, read
co-function.

	L Sin	d	L Tan	c d	L Ctn	L Cos	d	Prop. Pts.			
0	9.81 694		9.93 916		0.06 084	9.87 778	60				
1	9.81 709	15	9.93 942	26	0.06 058	9.87 767	59				
2	9.81 723	14	9.93 967	25	0.06 033	9.87 756	58				
3	9.81 738	15	9.93 993	26	0.06 007	9.87 745	57				
4	9.81 752	14	9.94 018	25	0.05 982	9.87 734	56				
5	9.81 767	15	9.94 044	26	0.05 956	9.87 723	55				
6	9.81 781	14	9.94 069	25	0.05 931	9.87 712	54				
7	9.81 796	15	9.94 095	26	0.05 905	9.87 701	53				
8	9.81 810	14	9.94 120	25	0.05 880	9.87 690	52				
9	9.81 825	15	9.94 146	26	0.05 854	9.87 679	51				
10	9.81 839	14	9.94 171	25	0.05 829	9.87 668	50				
11	9.81 854	15	9.94 197	26	0.05 803	9.87 657	49	2	26	25	15
12	9.81 868	14	9.94 222	25	0.05 778	9.87 646	48	3	5.2	5.0	3.0
13	9.81 882	15	9.94 248	26	0.05 752	9.87 635	47	4	7.8	7.5	4.5
14	9.81 897	14	9.94 273	25	0.05 727	9.87 624	46	5	10.4	10.0	6.0
15	9.81 911	15	9.94 299	26	0.05 701	9.87 613	45	6	13.0	12.5	7.5
16	9.81 926	14	9.94 324	25	0.05 676	9.87 601	44	7	15.6	15.0	9.0
17	9.81 940	15	9.94 350	26	0.05 650	9.87 590	43	8	18.2	17.5	10.5
18	9.81 955	14	9.94 375	25	0.05 625	9.87 579	42	9	20.8	20.0	12.0
19	9.81 969	15	9.94 401	26	0.05 599	9.87 568	41		23.4	22.5	13.5
20	9.81 983	14	9.94 426	25	0.05 574	9.87 557	40				
21	9.81 998	15	9.94 452	26	0.05 548	9.87 546	39				
22	9.82 012	14	9.94 477	25	0.05 523	9.87 535	38		14	12	11
23	9.82 026	15	9.94 503	26	0.05 497	9.87 524	37	2	2.8	2.4	2.2
24	9.82 041	14	9.94 528	25	0.05 472	9.87 513	36	3	4.2	3.6	3.3
25	9.82 055	15	9.94 554	26	0.05 446	9.87 501	35	4	5.6	4.8	4.4
26	9.82 069	14	9.94 579	25	0.05 421	9.87 490	34	5	7.0	6.0	5.5
27	9.82 084	15	9.94 604	26	0.05 396	9.87 479	33	6	8.4	7.2	6.6
28	9.82 098	14	9.94 630	25	0.05 370	9.87 468	32	7	9.8	8.4	7.7
29	9.82 112	15	9.94 655	26	0.05 345	9.87 457	31	8	11.2	9.6	8.8
30	9.82 126	14	9.94 681	25	0.05 319	9.87 446	30	9	12.6	10.8	9.9
31	9.82 141	15	9.94 706	26	0.05 294	9.87 434	29				
32	9.82 155	14	9.94 732	25	0.05 268	9.87 423	28				
33	9.82 169	15	9.94 757	26	0.05 243	9.87 412	27				
34	9.82 184	14	9.94 783	25	0.05 217	9.87 401	26				
35	9.82 198	15	9.94 808	26	0.05 192	9.87 390	25				
36	9.82 212	14	9.94 834	25	0.05 166	9.87 378	24				
37	9.82 226	15	9.94 859	26	0.05 141	9.87 367	23				
38	9.82 240	14	9.94 884	25	0.05 116	9.87 356	22				
39	9.82 255	15	9.94 910	26	0.05 090	9.87 345	21				
40	9.82 269	14	9.94 935	25	0.05 065	9.87 334	20				
41	9.82 283	15	9.94 961	26	0.05 039	9.87 322	19				
42	9.82 297	14	9.94 986	25	0.05 014	9.87 311	18				
43	9.82 311	15	9.95 012	26	0.04 988	9.87 300	17				
44	9.82 326	14	9.95 037	25	0.04 963	9.87 288	16				
45	9.82 340	15	9.95 062	26	0.04 938	9.87 277	15				
46	9.82 354	14	9.95 088	25	0.04 912	9.87 266	14				
47	9.82 368	15	9.95 113	26	0.04 887	9.87 255	13				
48	9.82 382	14	9.95 139	25	0.04 861	9.87 243	12				
49	9.82 396	15	9.95 164	26	0.04 836	9.87 232	11				
50	9.82 410	14	9.95 190	25	0.04 810	9.87 221	10				
51	9.82 424	15	9.95 215	26	0.04 785	9.87 209	9				
52	9.82 439	14	9.95 240	25	0.04 760	9.87 198	8				
53	9.82 453	15	9.95 266	26	0.04 734	9.87 187	7				
54	9.82 467	14	9.95 291	25	0.04 709	9.87 175	6				
55	9.82 481	15	9.95 317	26	0.04 683	9.87 164	5				
56	9.82 495	14	9.95 342	25	0.04 658	9.87 153	4				
57	9.82 509	15	9.95 368	26	0.04 632	9.87 141	3				
58	9.82 523	14	9.95 393	25	0.04 607	9.87 130	2				
59	9.82 537	15	9.95 418	26	0.04 582	9.87 119	1				
60	9.82 551	14	9.95 444	25	0.04 556	9.87 107	0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	Prop. Pts			

From the top :

For $41^{\circ}+$ or $221^{\circ}+$,
read as printed; for
 $131^{\circ}+$ or $311^{\circ}+$, read
co-function.

From the bottom :

For $48^{\circ}+$ or $228^{\circ}+$,
read as printed; for
 $138^{\circ}+$ or $318^{\circ}+$, read
co-function.

								Prop. Pts.				
/	L Sin	d	L Tan	c d	L Ctn	L Cos	d					
0	9.82 551	11	9.95 444	25	0.04 556	9.87 107	11	60				
1	9.82 565	11	9.95 469	26	0.04 531	9.87 096	11	59				
2	9.82 579	11	9.95 495	25	0.04 505	9.87 085	12	58				
3	9.82 593	11	9.95 520	25	0.04 480	9.87 073	12	57				
4	9.82 607	14	9.95 545	26	0.04 455	9.87 062	12	56				
5	9.82 621	14	9.95 571	25	0.04 429	9.87 050	12	55				
6	9.82 635	14	9.95 596	26	0.04 404	9.87 039	11	54				
7	9.82 649	14	9.95 622	25	0.04 378	9.87 028	12	53				
8	9.82 663	14	9.95 647	25	0.04 353	9.87 016	12	52				
9	9.82 677	14	9.95 672	26	0.04 328	9.87 005	12	51				
10	9.82 691	14	9.95 698	25	0.04 302	9.86 993	11	50				
11	9.82 705	14	9.95 723	25	0.04 277	9.86 982	12	49	2	26	25	14
12	9.82 719	14	9.95 748	25	0.04 252	9.86 970	12	48	3	5.2	5.0	2.8
13	9.82 733	14	9.95 774	26	0.04 226	9.86 959	11	47	4	7.8	7.5	4.2
14	9.82 747	14	9.95 799	25	0.04 201	9.86 947	12	46	5	10.4	10.0	5.6
15	9.82 761	14	9.95 825	26	0.04 175	9.86 936	11	45	6	13.0	12.5	7.0
16	9.82 775	13	9.95 850	25	0.04 150	9.86 924	12	44	7	15.6	15.0	8.4
17	9.82 788	14	9.95 875	26	0.04 125	9.86 913	11	43	8	18.2	17.5	9.8
18	9.82 802	14	9.95 901	25	0.04 099	9.86 902	12	42	9	20.8	20.0	11.2
19	9.82 816	14	9.95 926	26	0.04 074	9.86 890	11	41		23.4	22.5	12.6
20	9.82 830	14	9.95 952	25	0.04 048	9.86 879	12	40				
21	9.82 844	11	9.95 977	25	0.04 023	9.86 867	12	39				
22	9.82 858	14	9.96 002	26	0.03 998	9.86 855	11	38				
23	9.82 872	13	9.96 028	25	0.03 972	9.86 844	12	37				
24	9.82 885	11	9.96 053	25	0.03 947	9.86 832	11	36	2	13	12	11
25	9.82 899	11	9.96 078	26	0.03 922	9.86 821	12	35	3	2.6	2.4	2.2
26	9.82 913	11	9.96 104	25	0.03 896	9.86 809	11	34	4	3.9	3.6	3.3
27	9.82 927	11	9.96 129	26	0.03 871	9.86 798	12	33	5	5.2	4.8	4.4
28	9.82 941	14	9.96 155	25	0.03 845	9.86 786	11	32	6	6.5	6.0	5.5
29	9.82 955	13	9.96 180	25	0.03 820	9.86 775	12	31	7	7.8	7.2	6.6
30	9.82 968	11	9.96 205	26	0.03 795	9.86 763	11	30	8	9.1	8.4	7.7
31	9.82 982	11	9.96 231	25	0.03 769	9.86 752	12	29	9	10.4	9.6	8.8
32	9.82 996	14	9.96 256	25	0.03 744	9.86 740	12	28		11.7	10.8	9.9
33	9.83 010	14	9.96 281	26	0.03 719	9.86 728	11	27				
34	9.83 023	14	9.96 307	25	0.03 693	9.86 717	12	26				
35	9.83 037	14	9.96 332	25	0.03 668	9.86 705	11	25				
36	9.83 051	14	9.96 357	26	0.03 643	9.86 694	12	24				
37	9.83 065	14	9.96 383	25	0.03 617	9.86 682	12	23				
38	9.83 078	13	9.96 408	25	0.03 592	9.86 670	11	22				
39	9.83 092	14	9.96 433	26	0.03 567	9.86 659	12	21				
40	9.83 106	14	9.96 459	25	0.03 541	9.86 647	12	20				
41	9.83 120	13	9.96 484	26	0.03 516	9.86 635	11	19				
42	9.83 133	14	9.96 510	25	0.03 490	9.86 624	12	18				
43	9.83 147	14	9.96 535	25	0.03 465	9.86 612	12	17				
44	9.83 161	13	9.96 560	26	0.03 440	9.86 600	11	16				
45	9.83 174	14	9.96 586	25	0.03 414	9.86 589	12	15				
46	9.83 188	14	9.96 611	25	0.03 389	9.86 577	12	14				
47	9.83 202	13	9.96 636	26	0.03 364	9.86 565	11	13				
48	9.83 215	14	9.96 662	25	0.03 338	9.86 554	12	12				
49	9.83 229	13	9.96 687	25	0.03 313	9.86 542	12	11				
50	9.83 242	14	9.96 712	26	0.03 288	9.86 530	12	10				
51	9.83 256	14	9.96 738	25	0.03 262	9.86 518	11	9				
52	9.83 270	13	9.96 763	25	0.03 237	9.86 507	12	8				
53	9.83 283	14	9.96 788	26	0.03 212	9.86 495	12	7				
54	9.83 297	14	9.96 814	25	0.03 186	9.86 483	11	6				
55	9.83 310	14	9.96 839	25	0.03 161	9.86 472	12	5				
56	9.83 324	11	9.96 864	26	0.03 136	9.86 460	12	4				
57	9.83 338	13	9.96 890	25	0.03 110	9.86 448	12	3				
58	9.83 351	14	9.96 915	25	0.03 085	9.86 436	11	2				
59	9.83 365	13	9.96 940	26	0.03 060	9.86 425	12	1				
60	9.83 378		9.96 966		0.03 034	9.86 413		0				
	L Cos	d	L Ctn	c d	L Tan	L Sin	d		Prop. Pts.			

From the top:

For $42^{\circ}+$ or $222^{\circ}+$,
read as printed; for
 $132^{\circ}+$ or $312^{\circ}+$, read
co-function.

From the bottom:

For $47^{\circ}+$ or $227^{\circ}+$,
read as printed; for
 $137^{\circ}+$ or $317^{\circ}+$, read
co-function.

Prop. Pts.											
26	25	14									
2	5.2	5.0	2.8								
3	7.8	7.5	4.2								
4	10.4	10.0	5.6								
5	13.0	12.5	7.0								
6	15.6	15.0	8.4								
7	18.2	17.5	9.8								
8	20.8	20.0	11.2								
9	23.4	22.5	12.6								
13	12	11									
2	2.6	2.4	2.2								
3	3.9	3.6	3.3								
4	5.2	4.8	4.4								
5	6.5	6.0	5.5								
6	7.8	7.2	6.6								
7	9.1	8.4	7.7								
8	10.4	9.6	8.8								
9	11.7	10.8	9.9								
From the top :											
For 43°+ or 223°+,											
read as printed; for											
133°+ or 313°+, read											
co-function.											
From the bottom :											
For 46°+ or 226°+,											
read as printed; for											
136°+ or 316°+, read											
co-function.											

From the top :

For 43°+ or 223°+,
read as printed; for
133°+ or 313°+, read
co-function.

From the bottom :

For 46°+ or 226°+,
read as printed; for
136°+ or 316°+, read
co-function.

										Prop. Pts.			
'	L Sin	d	L Tan	c d	L Ctn	L Cos	d						
0	9.84 177	13	9.98 484	25	0.01 516	9.85 693	12	60					
1	9.84 190	13	9.98 509	25	0.01 491	9.85 681	12	59					
2	9.84 203	13	9.98 534	26	0.01 466	9.85 669	12	58					
3	9.84 216	13	9.98 560	25	0.01 440	9.85 657	12	57					
4	9.84 229	13	9.98 585	25	0.01 415	9.85 645	12	56					
5	9.84 242	13	9.98 610	25	0.01 390	9.85 632	12	55					
6	9.84 255	14	9.98 635	26	0.01 365	9.85 620	12	54					
7	9.84 269	13	9.98 661	25	0.01 339	9.85 608	12	53					
8	9.84 282	13	9.98 686	25	0.01 314	9.85 596	12	52					
9	9.84 295	13	9.98 711	26	0.01 289	9.85 583	12	51					
10	9.84 308	13	9.98 737	25	0.01 263	9.85 571	12	50					
11	9.84 321	13	9.98 762	25	0.01 238	9.85 559	12	49					
12	9.84 334	13	9.98 787	25	0.01 213	9.85 547	12	48					
13	9.84 347	13	9.98 812	26	0.01 188	9.85 534	12	47					
14	9.84 360	13	9.98 838	25	0.01 162	9.85 522	12	46					
15	9.84 373	12	9.98 863	25	0.01 137	9.85 510	12	45					
16	9.84 385	13	9.98 888	25	0.01 112	9.85 497	12	44					
17	9.84 398	13	9.98 913	26	0.01 087	9.85 485	12	43					
18	9.84 411	13	9.98 939	25	0.01 061	9.85 473	12	42					
19	9.84 424	13	9.98 964	25	0.01 036	9.85 460	12	41					
20	9.84 437	13	9.98 989	26	0.01 011	9.85 448	12	40					
21	9.84 450	13	9.99 015	25	0.00 985	9.85 436	12	39					
22	9.84 463	13	9.99 040	25	0.00 960	9.85 423	12	38					
23	9.84 476	13	9.99 065	25	0.00 935	9.85 411	12	37					
24	9.84 489	13	9.99 090	26	0.00 910	9.85 399	12	36					
25	9.84 502	13	9.99 116	25	0.00 884	9.85 386	12	35					
26	9.84 515	13	9.99 141	25	0.00 859	9.85 374	12	34					
27	9.84 528	12	9.99 166	25	0.00 834	9.85 361	12	33					
28	9.84 540	13	9.99 191	26	0.00 809	9.85 349	12	32					
29	9.84 553	13	9.99 217	25	0.00 783	9.85 337	12	31					
30	9.84 566	13	9.99 242	25	0.00 758	9.85 324	12	30					
31	9.84 579	13	9.99 267	26	0.00 733	9.85 312	12	29					
32	9.84 592	13	9.99 293	25	0.00 707	9.85 299	12	28					
33	9.84 605	13	9.99 318	25	0.00 682	9.85 287	12	27					
34	9.84 618	12	9.99 343	25	0.00 657	9.85 274	12	26					
35	9.84 630	13	9.99 368	26	0.00 632	9.85 262	12	25					
36	9.84 643	13	9.99 394	25	0.00 606	9.85 250	12	24					
37	9.84 656	13	9.99 419	25	0.00 581	9.85 237	12	23					
38	9.84 669	13	9.99 444	25	0.00 556	9.85 225	12	22					
39	9.84 682	12	9.99 469	26	0.00 531	9.85 212	12	21					
40	9.84 694	13	9.99 495	25	0.00 505	9.85 200	12	20					
41	9.84 707	13	9.99 520	25	0.00 480	9.85 187	12	19					
42	9.84 720	13	9.99 545	25	0.00 455	9.85 175	12	18					
43	9.84 733	13	9.99 570	26	0.00 430	9.85 162	12	17					
44	9.84 745	13	9.99 596	25	0.00 404	9.85 150	12	16					
45	9.84 758	13	9.99 621	25	0.00 379	9.85 137	12	15					
46	9.84 771	13	9.99 646	26	0.00 354	9.85 125	12	14					
47	9.84 784	12	9.99 672	25	0.00 328	9.85 112	12	13					
48	9.84 796	13	9.99 697	25	0.00 303	9.85 100	12	12					
49	9.84 809	13	9.99 722	25	0.00 278	9.85 087	12	11					
50	9.84 822	13	9.99 747	26	0.00 253	9.85 074	12	10					
51	9.84 835	12	9.99 773	25	0.00 227	9.85 062	12	9					
52	9.84 847	13	9.99 798	25	0.00 202	9.85 049	12	8					
53	9.84 860	13	9.99 823	25	0.00 177	9.85 037	12	7					
54	9.84 873	12	9.99 848	26	0.00 152	9.85 024	12	6					
55	9.84 885	13	9.99 874	25	0.00 126	9.85 012	12	5					
56	9.84 898	13	9.99 899	25	0.00 101	9.84 999	12	4					
57	9.84 911	12	9.99 924	25	0.00 076	9.84 986	12	3					
58	9.84 923	13	9.99 949	26	0.00 051	9.84 974	12	2					
59	9.84 936	13	9.99 975	25	0.00 025	9.84 961	12	1					
60	9.84 949		0.00 000		0.00 000	9.84 949		0					
	L Cos	d	L Ctn	c d	L Tan	L Sin	d	'		Prop. Pts.			

IV] Table IV — Degrees, Minutes, and Seconds to Radians 91

Degrees				Minutes		Seconds	
0°	0.00000 00	60°	1.04719 76	120°	2.09439 51	0'	0.00000 00
1	0.01745 33	61	1.06465 08	121	2.11184 84	1	0.00009 48
2	0.03490 66	62	1.08210 41	122	2.12930 17	2	0.00009 97
3	0.05235 99	63	1.09955 74	123	2.14675 50	3	0.00001 45
4	0.06981 32	64	1.11701 07	124	2.16420 83	4	0.00001 94
5	0.08726 65	65	1.13446 40	125	2.18166 16	5	0.00002 42
6	0.10471 98	66	1.15191 73	126	2.19911 49	6	0.00002 91
7	0.12217 30	67	1.16937 06	127	2.21656 82	7	0.00003 39
8	0.13962 63	68	1.18682 39	128	2.23402 14	8	0.00003 88
9	0.15707 96	69	1.20427 72	129	2.25147 47	9	0.00004 36
10	0.17453 29	70	1.22173 05	130	2.26892 80	10	0.00004 85
11	0.19198 62	71	1.23918 38	131	2.28638 13	11	0.00005 33
12	0.20943 95	72	1.25663 71	132	2.30383 46	12	0.00005 82
13	0.22689 28	73	1.27409 04	133	2.32128 79	13	0.00006 30
14	0.24434 61	74	1.29154 36	134	2.33874 12	14	0.00006 79
15	0.26179 94	75	1.30899 69	135	2.35619 45	15	0.00007 27
16	0.27925 27	76	1.32645 02	136	2.37364 78	16	0.00007 76
17	0.29670 60	77	1.34390 35	137	2.39110 11	17	0.00008 24
18	0.31415 93	78	1.36135 68	138	2.40855 44	18	0.00008 73
19	0.33161 26	79	1.37881 01	139	2.42600 77	19	0.00009 21
20	0.34906 59	80	1.39626 34	140	2.44346 10	20	0.00009 70
21	0.36651 91	81	1.41371 67	141	2.46091 42	21	0.00010 18
22	0.38397 24	82	1.43117 00	142	2.47836 75	22	0.00010 67
23	0.40142 57	83	1.44862 33	143	2.49582 08	23	0.00011 15
24	0.41887 90	84	1.46607 66	144	2.51327 41	24	0.00011 64
25	0.43633 23	85	1.48352 99	145	2.53072 74	25	0.00012 12
26	0.45378 56	86	1.50098 32	146	2.54818 07	26	0.00012 61
27	0.47123 89	87	1.51843 64	147	2.56563 40	27	0.00013 09
28	0.48869 22	88	1.53588 97	148	2.58308 73	28	0.00013 57
29	0.50614 55	89	1.55334 30	149	2.60054 06	29	0.00014 06
30	0.52359 88	90	1.57079 63	150	2.61799 39	30	0.00014 54
31	0.54105 21	91	1.58824 96	151	2.63544 72	31	0.00015 03
32	0.55850 54	92	1.60570 29	152	2.65290 05	32	0.00015 51
33	0.57595 87	93	1.62315 62	153	2.67035 38	33	0.00016 00
34	0.59341 19	94	1.64060 95	154	2.68780 70	34	0.00016 48
35	0.61086 52	95	1.65806 28	155	2.70526 03	35	0.00016 97
36	0.62831 85	96	1.67551 61	156	2.72271 36	36	0.00017 45
37	0.64577 18	97	1.69296 94	157	2.74016 69	37	0.00017 94
38	0.66322 51	98	1.71042 27	158	2.75762 02	38	0.00018 42
39	0.68067 84	99	1.72787 60	159	2.77507 35	39	0.00018 91
40	0.69813 17	100	1.74532 93	160	2.79252 68	40	0.00019 39
41	0.71558 50	101	1.76278 26	161	2.80998 01	41	0.00019 88
42	0.73303 83	102	1.78023 58	162	2.82743 34	42	0.00020 36
43	0.75049 16	103	1.79768 91	163	2.84488 67	43	0.00020 85
44	0.76794 49	104	1.81514 24	164	2.86234 00	44	0.00021 33
45	0.78539 82	105	1.83259 57	165	2.87979 33	45	0.00021 82
46	0.80285 15	106	1.85004 90	166	2.89724 66	46	0.00022 30
47	0.82030 47	107	1.86750 23	167	2.91469 99	47	0.00022 79
48	0.83775 80	108	1.88495 56	168	2.93215 31	48	0.00023 27
49	0.85521 13	109	1.90240 89	169	2.94960 64	49	0.00023 76
50	0.87266 46	110	1.91986 22	170	2.96705 97	50	0.00024 24
51	0.89011 79	111	1.93731 55	171	2.98451 30	51	0.00024 73
52	0.90757 12	112	1.95476 88	172	3.00196 63	52	0.00025 21
53	0.92502 45	113	1.97222 21	173	3.01941 96	53	0.00025 70
54	0.94247 78	114	1.98967 53	174	3.03687 29	54	0.00026 18
55	0.95993 11	115	2.00712 86	175	3.05432 62	55	0.00026 66
56	0.97738 44	116	2.02458 19	176	3.07177 95	56	0.00027 15
57	0.99483 77	117	2.04203 52	177	3.08923 28	57	0.00027 63
58	1.01229 10	118	2.05948 85	178	3.10668 61	58	0.00028 12
59	1.02974 43	119	2.07694 18	179	3.12413 94	59	0.00028 60
60	1.04719 76	120	2.09439 51	180	3.14159 27	60	0.00029 09

x Radians	$\sin x$	$\cos x$	$\tan x$	Equivalent of x
.00	.00000	1.0000	.00000	0° 00'.0
.01	.01000	.99995	.01000	0° 34'.4
.02	.02000	.99980	.02000	1° 08'.8
.03	.03000	.99955	.03001	1° 43'.1
.04	.03999	.99920	.04002	2° 17'.5
.05	.04998	.99875	.05004	2° 51'.9
.06	.05996	.99820	.06007	3° 26'.3
.07	.06994	.99755	.07011	4° 00'.6
.08	.07991	.99680	.08017	4° 35'.0
.09	.08988	.99595	.09024	5° 09'.4
.10	.09983	.99500	.10033	5° 43'.8
.11	.10978	.99396	.11045	6° 18'.2
.12	.11971	.99281	.12058	6° 52'.5
.13	.12963	.99156	.13074	7° 26'.9
.14	.13954	.99022	.14092	8° 01'.3
.15	.14944	.98877	.15114	8° 35'.7
.16	.15932	.98723	.16138	9° 10'.0
.17	.16918	.98558	.17166	9° 44'.4
.18	.17903	.98384	.18197	10° 18'.8
.19	.18886	.98200	.19232	10° 53'.2
.20	.19867	.98007	.20271	11° 27'.5
.21	.20846	.97803	.21314	12° 01'.9
.22	.21823	.97590	.22362	12° 36'.3
.23	.22798	.97367	.23414	13° 10'.7
.24	.23770	.97134	.24472	13° 45'.1
.25	.24740	.96891	.25534	14° 19'.4
.26	.25708	.96639	.26602	14° 53'.8
.27	.26673	.96377	.27676	15° 28'.2
.28	.27636	.96106	.28755	16° 02'.6
.29	.28595	.95824	.29841	16° 36'.9
.30	.29552	.95534	.30934	17° 11'.3
.31	.30506	.95233	.32033	17° 45'.7
.32	.31457	.94924	.33139	18° 20'.1
.33	.32404	.94604	.34252	18° 54'.5
.34	.33349	.94275	.35374	19° 28'.8
.35	.34290	.93937	.36503	20° 03'.2
.36	.35227	.93590	.37640	20° 37'.6
.37	.36162	.93233	.38786	21° 12'.0
.38	.37092	.92866	.39941	21° 46'.3
.39	.38019	.92491	.41106	22° 20'.7
.40	.38942	.92106	.42279	22° 55'.1
.41	.39861	.91712	.43463	23° 29'.5
.42	.40776	.91309	.44657	24° 03'.9
.43	.41687	.90897	.45862	24° 38'.2
.44	.42594	.90475	.47078	25° 12'.6
.45	.43497	.90045	.48305	25° 47'.0
.46	.44395	.89605	.49545	26° 21'.4
.47	.45289	.89157	.50795	26° 55'.7
.48	.46178	.88699	.52061	27° 30'.1
.49	.47063	.88233	.53339	28° 04'.5
.50	.47943	.87758	.54630	28° 38'.9

x Radians	$\sin x$	$\cos x$	$\tan x$	Equivalent of x
.50	.47943	.87758	.54630	28° 38'.9
.51	.48818	.87274	.55936	29° 13'.3
.52	.49688	.86782	.57256	29° 47'.6
.53	.50553	.86281	.58592	30° 22'.0
.54	.51414	.85771	.59943	30° 56'.4
.55	.52269	.85252	.61311	31° 30'.8
.56	.53119	.84726	.62695	32° 05'.1
.57	.53963	.84190	.64097	32° 39'.5
.58	.54802	.83646	.65517	33° 13'.9
.59	.55636	.83094	.66956	33° 48'.3
.60	.56464	.82534	.68414	34° 22'.6
.61	.57287	.81965	.69892	34° 57'.0
.62	.58104	.81388	.71391	35° 31'.4
.63	.58914	.80803	.72911	36° 05'.8
.64	.59720	.80210	.74454	36° 40'.2
.65	.60519	.79608	.76020	37° 14'.5
.66	.61312	.78999	.77610	37° 48'.9
.67	.62099	.78382	.79225	38° 23'.3
.68	.62879	.77757	.80866	38° 57'.7
.69	.63654	.77125	.82533	39° 32'.0
.70	.64422	.76484	.84229	40° 06'.4
.71	.65183	.75836	.85953	40° 40'.8
.72	.65938	.75181	.87707	41° 15'.2
.73	.66687	.74517	.89492	41° 49'.6
.74	.67429	.73847	.91309	42° 23'.9
.75	.68164	.73169	.93160	42° 58'.3
.76	.68892	.72484	.95055	43° 32'.7
.77	.69614	.71791	.96967	44° 07'.1
.78	.70328	.71091	.98926	44° 41'.4
.79	.71035	.70385	1.0092	45° 15'.8
.80	.71736	.69671	1.0296	45° 50'.2
.81	.72429	.68950	1.0505	46° 24'.6
.82	.73115	.68222	1.0717	46° 59'.0
.83	.73793	.67488	1.0934	47° 33'.3
.84	.74464	.66746	1.1156	48° 07'.7
.85	.75128	.65998	1.1383	48° 42'.1
.86	.75784	.65244	1.1616	49° 16'.5
.87	.76433	.64483	1.1853	49° 50'.8
.88	.77074	.63715	1.2097	50° 25'.2
.89	.77707	.62941	1.2346	50° 59'.6
.90	.78333	.62161	1.2602	51° 34'.0
.91	.78950	.61375	1.2864	52° 08'.3
.92	.79560	.60582	1.3133	52° 42'.7
.93	.80162	.59783	1.3409	53° 17'.1
.94	.80756	.58979	1.3692	53° 51'.5
.95	.81342	.58168	1.3984	54° 25'.9
.96	.81919	.57352	1.4284	55° 00'.2
.97	.82489	.56530	1.4592	55° 34'.6
.98	.83050	.55702	1.4910	56° 09'.0
.99	.83603	.54869	1.5237	56° 43'.4
1.00	.84147	.54030	1.5574	57° 17'.7

α Radians	Sin α	Cos α	Tan α	Equivalent of α
1.00	.84147	.54030	1.5574	57° 17'.7
1.01	.84683	.53186	1.5922	57° 52'.1
1.02	.85211	.52337	1.6281	58° 26'.5
1.03	.85730	.51482	1.6652	59° 00'.9
1.04	.86240	.50622	1.7036	59° 35'.3
1.05	.86742	.49757	1.7433	60° 09'.6
1.06	.87236	.48887	1.7844	60° 44'.0
1.07	.87720	.48012	1.8270	61° 18'.4
1.08	.88196	.47133	1.8712	61° 52'.8
1.09	.88663	.46249	1.9171	62° 27'.1
1.10	.89121	.45360	1.9648	63° 01'.5
1.11	.89570	.44466	2.0143	63° 35'.9
1.12	.90010	.43568	2.0660	64° 10'.3
1.13	.90441	.42666	2.1198	64° 44'.7
1.14	.90863	.41759	2.1759	65° 19'.0
1.15	.91276	.40849	2.2345	65° 53'.4
1.16	.91680	.39934	2.2958	66° 27'.8
1.17	.92075	.39015	2.3600	67° 02'.2
1.18	.92461	.38092	2.4273	67° 36'.5
1.19	.92837	.37166	2.4979	68° 10'.9
1.20	.93204	.36236	2.5722	68° 45'.3
1.21	.93562	.35302	2.6503	69° 19'.7
1.22	.93910	.34365	2.7328	69° 54'.1
1.23	.94249	.33424	2.8198	70° 28'.4
1.24	.94578	.32480	2.9119	71° 02'.8
1.25	.94898	.31532	3.0096	71° 37'.2
1.26	.95209	.30582	3.1133	72° 11'.6
1.27	.95510	.29628	3.2236	72° 45'.9
1.28	.95802	.28672	3.3413	73° 20'.3
1.29	.96084	.27712	3.4672	73° 54'.7
1.30	.96356	.26750	3.6021	74° 29'.1

α Radians	Sin α	Cos α	Tan α	Equivalent of α
1.30	.96356	.26750	3.6021	74° 29'.1
1.31	.96618	.25785	3.7470	75° 03'.4
1.32	.96872	.24818	3.9033	75° 37'.8
1.33	.97115	.23848	4.0723	76° 12'.2
1.34	.97348	.22875	4.2556	76° 46'.6
1.35	.97572	.21901	4.4552	77° 21'.0
1.36	.97786	.20924	4.6734	77° 55'.3
1.37	.97991	.19945	4.9131	78° 29'.7
1.38	.98185	.18964	5.1774	79° 04'.1
1.39	.98370	.17981	5.4707	79° 38'.5
1.40	.98545	.16997	5.7979	80° 12'.8
1.41	.98710	.16010	6.1654	80° 47'.2
1.42	.98865	.15023	6.5811	81° 21'.6
1.43	.99010	.14033	7.0555	81° 56'.0
1.44	.99146	.13042	7.6018	82° 30'.4
1.45	.99271	.12050	8.2381	83° 04'.7
1.46	.99387	.11057	8.9886	83° 39'.1
1.47	.99492	.10063	9.8874	84° 13'.5
1.48	.99588	.09067	10.983	84° 47'.9
1.49	.99674	.08071	12.350	85° 22'.2
1.50	.99749	.07074	14.101	85° 56'.6
1.51	.99815	.06076	16.428	86° 31'.0
1.52	.99871	.05077	19.670	87° 05'.4
1.53	.99917	.04079	24.498	87° 39'.8
1.54	.99953	.03079	32.461	88° 14'.1
1.55	.99978	.02079	44.978	88° 48'.5
1.56	.99994	.01080	92.621	89° 22'.9
1.57	1.00000	.00080	125.58	89° 57'.3
1.58	.99996	.00020	108.65	90° 31'.6
1.59	.99982	.00120	52.067	91° 06'.0
1.60	.99957	.00220	34.233	91° 40'.4

 π radians = 180°

 $\pi = 3.14159265$

1 radian = 57° 17' 44".806 = 57°.2957795

3600'' = 60' = 1° = .01745329 radian

TABLE Va—RADIANS TO DEGREES

	RADIANS	TENTHS	HUNDRETHS	THOUSANDTHS	TEN-THOUSANDTHS
1	57° 17' 44".8	5° 43' 46".5	0° 34' 22".6	0° 3' 26".3	0° 0' 20".6
2	114° 35' 29".6	11° 27' 33".0	1° 8' 45".3	0° 6' 52".5	0° 0' 41".3
3	171° 53' 14".4	17° 11' 19".4	1° 43' 07".9	0° 10' 18".8	0° 1' 01".9
4	229° 10' 59".2	22° 55' 05".9	2° 17' 30".6	0° 13' 45".1	0° 1' 22".5
5	286° 28' 44".0	28° 38' 52".4	2° 51' 53".2	0° 17' 11".3	0° 1' 43".1
6	343° 46' 28".8	34° 22' 38".9	3° 26' 15".9	0° 20' 37".6	0° 2' 03".8
7	401° 4' 13".6	40° 6' 25".4	4° 0' 38".5	0° 24' 03".9	0° 2' 24".4
8	458° 21' 58".4	45° 50' 11".8	4° 35' 01".2	0° 27' 30".1	0° 2' 45".0
9	515° 39' 43".3	51° 33' 58".3	5° 9' 23".8	0° 30' 56".4	0° 3' 05".6

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
1.00	1.0000	1.00000	3.16228	1.00000	1.00000	2.15443	4.64159	1.00000
1.01	1.0201	1.00499	3.17805	1.03030	1.00332	2.16159	4.65701	.990099
1.02	1.0404	1.00995	3.19374	1.06121	1.00662	2.16870	4.67233	.980392
1.03	1.0609	1.01489	3.20936	1.09273	1.00999	2.17577	4.68755	.970874
1.04	1.0816	1.01980	3.22490	1.12486	1.01316	2.18279	4.70267	.961538
1.05	1.1025	1.02470	3.24037	1.15762	1.01640	2.18976	4.71769	.952381
1.06	1.1236	1.02956	3.25576	1.19102	1.01961	2.19669	4.73262	.943396
1.07	1.1449	1.03441	3.27109	1.22504	1.02281	2.20358	4.74746	.934579
1.08	1.1664	1.03923	3.28634	1.25971	1.02599	2.21042	4.76220	.925926
1.09	1.1881	1.04403	3.30151	1.29503	1.02914	2.21722	4.77686	.917431
1.10	1.2100	1.04881	3.31662	1.33100	1.03228	2.22398	4.79142	.909091
1.11	1.2321	1.05357	3.33167	1.36763	1.03540	2.23070	4.80590	.900901
1.12	1.2544	1.05830	3.34664	1.40493	1.03850	2.23738	4.82028	.892857
1.13	1.2769	1.06301	3.36155	1.44290	1.04158	2.24402	4.83459	.884956
1.14	1.2996	1.06771	3.37639	1.48154	1.04464	2.25062	4.84881	.877193
1.15	1.3225	1.07238	3.39116	1.52088	1.04769	2.25718	4.86294	.869565
1.16	1.3456	1.07703	3.40588	1.56090	1.05072	2.26370	4.87700	.862069
1.17	1.3689	1.08167	3.42053	1.60161	1.05373	2.27019	4.89097	.854701
1.18	1.3924	1.08628	3.43511	1.64303	1.05672	2.27664	4.90487	.847458
1.19	1.4161	1.09087	3.44964	1.68516	1.05970	2.28305	4.91868	.840336
1.20	1.4400	1.09545	3.46410	1.72800	1.06266	2.28943	4.93242	.833333
1.21	1.4641	1.10000	3.47851	1.77156	1.06560	2.29577	4.94609	.826446
1.22	1.4884	1.10454	3.49285	1.81585	1.06853	2.30208	4.95968	.819672
1.23	1.5129	1.10905	3.50714	1.86087	1.07144	2.30835	4.97319	.813008
1.24	1.5376	1.11355	3.52136	1.90662	1.07434	2.31459	4.98663	.806452
1.25	1.5625	1.11803	3.53553	1.95312	1.07722	2.32079	5.00000	.800000
1.26	1.5876	1.12250	3.54965	2.00038	1.08008	2.32697	5.01330	.793651
1.27	1.6129	1.12694	3.56371	2.04838	1.08293	2.33311	5.02653	.787402
1.28	1.6384	1.13137	3.57771	2.09715	1.08577	2.33921	5.03968	.781250
1.29	1.6641	1.13578	3.59166	2.14669	1.08859	2.34529	5.05277	.775194
1.30	1.6900	1.14018	3.60555	2.19700	1.09139	2.35133	5.06580	.769231
1.31	1.7161	1.14455	3.61939	2.24809	1.09418	2.35735	5.07875	.763359
1.32	1.7424	1.14891	3.63318	2.29997	1.09696	2.36333	5.09164	.757576
1.33	1.7689	1.15326	3.64692	2.35264	1.09972	2.36928	5.10447	.751880
1.34	1.7956	1.15758	3.66060	2.40610	1.10247	2.37521	5.11723	.746269
1.35	1.8225	1.16190	3.67423	2.46038	1.10521	2.38110	5.12993	.740741
1.36	1.8496	1.16619	3.68782	2.51546	1.10793	2.38697	5.14256	.735294
1.37	1.8769	1.17047	3.70135	2.57135	1.11064	2.39280	5.15514	.729927
1.38	1.9044	1.17473	3.71484	2.62807	1.11334	2.39861	5.16765	.724638
1.39	1.9321	1.17898	3.72827	2.68562	1.11602	2.40439	5.18010	.719424
1.40	1.9600	1.18322	3.74166	2.74400	1.11869	2.41011	5.19249	.714286
1.41	1.9881	1.18743	3.75500	2.80322	1.12135	2.41587	5.20483	.709220
1.42	2.0164	1.19164	3.76829	2.86329	1.12399	2.42156	5.21710	.704225
1.43	2.0449	1.19583	3.78153	2.92421	1.12662	2.42724	5.22932	.699301
1.44	2.0736	1.20000	3.79473	2.98598	1.12924	2.43288	5.24148	.694444
1.45	2.1025	1.20416	3.80789	3.04862	1.13185	2.43850	5.25359	.689655
1.46	2.1316	1.20830	3.82099	3.11214	1.13445	2.44409	5.26564	.684932
1.47	2.1609	1.21244	3.83406	3.17652	1.13703	2.44966	5.27763	.680272
1.48	2.1904	1.21655	3.84708	3.24179	1.13960	2.45520	5.28957	.675676
1.49	2.2201	1.22066	3.86005	3.30795	1.14216	2.46072	5.30146	.671141
1.50	2.2500	1.22474	3.87298	3.37500	1.14471	2.46621	5.31329	.666667
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
1.50	2.2500	1.22474	3.87298	3.37500	1.14471	2.46621	5.31329	.666667
1.51	2.2801	1.22882	3.88587	3.44295	1.14725	2.47168	5.32507	.662252
1.52	2.3104	1.23288	3.89872	3.51181	1.14978	2.47712	5.33680	.657895
1.53	2.3409	1.23693	3.91152	3.58158	1.15230	2.48255	5.34848	.653595
1.54	2.3716	1.24097	3.92428	3.65226	1.15480	2.48794	5.36011	.649351
1.55	2.4025	1.24499	3.93700	3.72388	1.15729	2.49332	5.37169	.645161
1.56	2.4336	1.24900	3.94968	3.79642	1.15978	2.49867	5.38321	.641026
1.57	2.4649	1.25300	3.96232	3.86989	1.16225	2.50399	5.39469	.636943
1.58	2.4964	1.25698	3.97492	3.94431	1.16471	2.50930	5.40612	.632911
1.59	2.5281	1.26095	3.98748	4.01968	1.16717	2.51458	5.41750	.628931
1.60	2.5600	1.26491	4.00000	4.09600	1.16961	2.51984	5.42884	.625000
1.61	2.5921	1.26886	4.01248	4.17328	1.17204	2.52508	5.44012	.621118
1.62	2.6244	1.27279	4.02492	4.25153	1.17446	2.53030	5.45136	.617284
1.63	2.6569	1.27671	4.03733	4.33075	1.17687	2.53549	5.46256	.613497
1.64	2.6896	1.28062	4.04969	4.41094	1.17927	2.54067	5.47370	.609756
1.65	2.7225	1.28451	4.06202	4.49212	1.18167	2.54582	5.48481	.606061
1.66	2.7556	1.28841	4.07431	4.57430	1.18405	2.55095	5.49586	.602410
1.67	2.7889	1.29228	4.08656	4.65746	1.18642	2.55607	5.50688	.598802
1.68	2.8224	1.29615	4.09878	4.74163	1.18878	2.56116	5.51785	.595238
1.69	2.8561	1.30000	4.11096	4.82681	1.19114	2.56623	5.52877	.591716
1.70	2.8900	1.30384	4.12311	4.91300	1.19348	2.57128	5.53966	.588235
1.71	2.9241	1.30767	4.13521	5.00021	1.19582	2.57639	5.55050	.584795
1.72	2.9584	1.31149	4.14729	5.08845	1.19815	2.58143	5.56130	.581395
1.73	2.9929	1.31529	4.15933	5.17772	1.20046	2.58642	5.57205	.578035
1.74	3.0276	1.31909	4.17133	5.26802	1.20277	2.59139	5.58277	.574713
1.75	3.0625	1.32288	4.18330	5.35938	1.20507	2.59635	5.59344	.571429
1.76	3.0976	1.32665	4.19524	5.45178	1.20736	2.60118	5.60408	.568182
1.77	3.1329	1.33041	4.20714	5.54523	1.20964	2.60610	5.61467	.564972
1.78	3.1684	1.33417	4.21900	5.63975	1.21192	2.61100	5.62523	.561798
1.79	3.2041	1.33791	4.23084	5.73534	1.21418	2.61588	5.63574	.558659
1.80	3.2400	1.34164	4.24264	5.83200	1.21644	2.62074	5.64622	.555556
1.81	3.2761	1.34536	4.25441	5.92974	1.21869	2.62559	5.65665	.552486
1.82	3.3124	1.34907	4.26615	6.02857	1.22093	2.63041	5.66705	.549451
1.83	3.3489	1.35277	4.27785	6.12849	1.22316	2.63522	5.67741	.546448
1.84	3.3856	1.35647	4.28952	6.22950	1.22539	2.64001	5.68773	.543478
1.85	3.4225	1.36015	4.30116	6.33162	1.22760	2.64479	5.69802	.540541
1.86	3.4596	1.36382	4.31277	6.43486	1.22981	2.64954	5.70827	.537634
1.87	3.4969	1.36748	4.32435	6.53920	1.23201	2.65428	5.71848	.534759
1.88	3.5344	1.37113	4.33590	6.64467	1.23420	2.65901	5.72865	.531915
1.89	3.5721	1.37477	4.34741	6.75127	1.23639	2.66371	5.73879	.529101
1.90	3.6100	1.37840	4.35890	6.85900	1.23856	2.66840	5.74890	.526316
1.91	3.6481	1.38203	4.37035	6.96787	1.24073	2.67307	5.75897	.523560
1.92	3.6864	1.38564	4.38178	7.07789	1.24289	2.67773	5.76900	.520833
1.93	3.7249	1.38924	4.39318	7.18906	1.24505	2.68237	5.77900	.518135
1.94	3.7636	1.39284	4.40454	7.30138	1.24719	2.68700	5.78896	.515464
1.95	3.8025	1.39642	4.41588	7.41488	1.24933	2.69161	5.79889	.512821
1.96	3.8416	1.40000	4.42719	7.52954	1.25146	2.69620	5.80879	.510204
1.97	3.8809	1.40357	4.43847	7.64537	1.25359	2.70078	5.81865	.507614
1.98	3.9204	1.40712	4.44972	7.76239	1.25571	2.70534	5.82848	.505051
1.99	3.9601	1.41067	4.46094	7.88060	1.25782	2.70989	5.83827	.502513
2.00	4.0000	1.41421	4.47214	8.00000	1.25992	2.71442	5.84804	.500000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
2.00	4.0000	1.41421	4.47214	8.00000	1.25992	2.71442	5.84804	.500000
2.01	4.0401	1.41774	4.48330	8.12060	1.26202	2.71893	5.85777	.497512
2.02	4.0804	1.42127	4.49444	8.24241	1.26411	2.72344	5.86746	.495050
2.03	4.1209	1.42478	4.50555	8.36543	1.26619	2.72792	5.87713	.492611
2.04	4.1616	1.42829	4.51664	8.48966	1.26827	2.73239	5.88677	.490196
2.05	4.2025	1.43178	4.52769	8.61512	1.27033	2.73685	5.89637	.487805
2.06	4.2436	1.43527	4.53872	8.74182	1.27240	2.74129	5.90594	.485437
2.07	4.2849	1.43875	4.54973	8.86974	1.27445	2.74572	5.91548	.483092
2.08	4.3264	1.44222	4.56070	8.99891	1.27650	2.75014	5.92499	.480769
2.09	4.3681	1.44568	4.57165	9.12933	1.27854	2.75454	5.93447	.478469
2.10	4.4100	1.44914	4.58258	9.26100	1.28058	2.75892	5.94392	.476190
2.11	4.4521	1.45258	4.59347	9.39393	1.28261	2.76330	5.95334	.473934
2.12	4.4944	1.45602	4.60435	9.52813	1.28463	2.76766	5.96273	.471698
2.13	4.5369	1.45945	4.61519	9.66360	1.28665	2.77200	5.97209	.469434
2.14	4.5796	1.46287	4.62601	9.80034	1.28866	2.77633	5.98142	.467290
2.15	4.6225	1.46629	4.63681	9.93838	1.29066	2.78065	5.99073	.465116
2.16	4.6656	1.46969	4.64758	10.0777	1.29266	2.78495	6.00000	.462963
2.17	4.7089	1.47309	4.65833	10.2183	1.29465	2.78924	6.00925	.460829
2.18	4.7524	1.47648	4.66905	10.3602	1.29664	2.79352	6.01846	.458716
2.19	4.7961	1.47986	4.67974	10.5035	1.29862	2.79779	6.02765	.456621
2.20	4.8400	1.48324	4.69042	10.6480	1.30059	2.80204	6.03681	.454545
2.21	4.8841	1.48661	4.70106	10.7939	1.30256	2.80628	6.04594	.452489
2.22	4.9284	1.48997	4.71169	10.9410	1.30452	2.81050	6.05505	.450450
2.23	4.9729	1.49332	4.72229	11.0896	1.30648	2.81472	6.06413	.448430
2.24	5.0176	1.49666	4.73286	11.2394	1.30843	2.81892	6.07318	.446429
2.25	5.0625	1.50000	4.74342	11.3906	1.31037	2.82311	6.08220	.444444
2.26	5.1076	1.50333	4.75395	11.5432	1.31231	2.82728	6.09120	.442478
2.27	5.1529	1.50665	4.76445	11.6971	1.31424	2.83145	6.10017	.440529
2.28	5.1984	1.50997	4.77493	11.8524	1.31617	2.83560	6.10911	.438596
2.29	5.2441	1.51327	4.78539	12.0090	1.31809	2.83974	6.11803	.436681
2.30	5.2900	1.51658	4.79583	12.1670	1.32001	2.84387	6.12693	.434783
2.31	5.3361	1.51987	4.80625	12.3264	1.32192	2.84798	6.13579	.432900
2.32	5.3824	1.52315	4.81661	12.4872	1.32382	2.85209	6.14463	.431034
2.33	5.4289	1.52643	4.82701	12.6493	1.32572	2.85618	6.15345	.429185
2.34	5.4756	1.52971	4.83735	12.8129	1.32761	2.86026	6.16224	.427350
2.35	5.5225	1.53297	4.84768	12.9779	1.32950	2.86433	6.17101	.425532
2.36	5.5696	1.53623	4.85798	13.1443	1.33139	2.86838	6.17975	.423729
2.37	5.6169	1.53948	4.86826	13.3121	1.33326	2.87243	6.18846	.421941
2.38	5.6644	1.54272	4.87852	13.4813	1.33514	2.87646	6.19715	.420168
2.39	5.7121	1.54596	4.88876	13.6519	1.33700	2.88049	6.20582	.418410
2.40	5.7600	1.54919	4.89898	13.8240	1.33887	2.88450	6.21447	.416667
2.41	5.8081	1.55242	4.90918	13.9975	1.34072	2.88850	6.22308	.414938
2.42	5.8564	1.55563	4.91935	14.1725	1.34257	2.89249	6.23168	.413223
2.43	5.9049	1.55885	4.92950	14.3489	1.34442	2.89647	6.24025	.411523
2.44	5.9536	1.56205	4.93964	14.5268	1.34626	2.90044	6.24880	.409836
2.45	6.0025	1.56525	4.94975	14.7061	1.34810	2.90439	6.25732	.408163
2.46	6.0516	1.56844	4.95984	14.8869	1.34993	2.90834	6.26583	.406504
2.47	6.1009	1.57162	4.96991	15.0692	1.35176	2.91227	6.27431	.404858
2.48	6.1504	1.57480	4.97996	15.2530	1.35358	2.91620	6.28276	.403226
2.49	6.2001	1.57797	4.98999	15.4382	1.35540	2.92011	6.29119	.401606
2.50	6.2500	1.58114	5.00000	15.6250	1.35721	2.92402	6.29961	.400000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
2.50	6.2500	1.58114	5.00000	15.6250	1.35721	2.42402	6.29961	.400000
2.51	6.3001	1.58430	5.00999	15.8133	1.35902	2.42791	6.30799	.398406
2.52	6.3504	1.58745	5.01996	16.0030	1.36082	2.43179	6.31636	.396825
2.53	6.4009	1.59060	5.02991	16.1943	1.36262	2.43567	6.32470	.395257
2.54	6.4516	1.59374	5.03984	16.3871	1.36441	2.43953	6.33303	.393701
2.55	6.5025	1.59687	5.04975	16.5814	1.36620	2.44338	6.34133	.392157
2.56	6.5536	1.60000	5.05964	16.7772	1.36798	2.44723	6.34960	.390625
2.57	6.6049	1.60312	5.06952	16.9746	1.36976	2.45106	6.35786	.389105
2.58	6.6564	1.60624	5.07937	17.1735	1.37153	2.45488	6.36610	.387597
2.59	6.7081	1.60935	5.08920	17.3740	1.37330	2.45869	6.37431	.386100
2.60	6.7600	1.61245	5.09902	17.5760	1.37507	2.46250	6.38250	.384615
2.61	6.8121	1.61555	5.10882	17.7796	1.37683	2.46629	6.39068	.383142
2.62	6.8644	1.61864	5.11859	17.9847	1.37859	2.47007	6.39883	.381679
2.63	6.9169	1.62173	5.12835	18.1914	1.38034	2.47385	6.40696	.380228
2.64	6.9696	1.62481	5.13809	18.3997	1.38208	2.47761	6.41507	.378788
2.65	7.0225	1.62788	5.14782	18.6096	1.38383	2.48137	6.42316	.377358
2.66	7.0756	1.63095	5.15752	18.8211	1.38557	2.48511	6.43123	.375940
2.67	7.1289	1.63401	5.16720	19.0342	1.38730	2.48885	6.43928	.374532
2.68	7.1824	1.63707	5.17687	19.2488	1.38903	2.49257	6.44731	.373134
2.69	7.2361	1.64012	5.18652	19.4651	1.39076	2.49629	6.45531	.371747
2.70	7.2900	1.64317	5.19615	19.6830	1.39248	2.50000	6.46330	.370370
2.71	7.3441	1.64621	5.20577	19.9025	1.39419	2.50370	6.47127	.369004
2.72	7.3984	1.64924	5.21536	20.1236	1.39591	2.50739	6.47922	.367647
2.73	7.4529	1.65227	5.22494	20.3464	1.39761	2.51107	6.48715	.366300
2.74	7.5076	1.65529	5.23450	20.5708	1.39932	2.51474	6.49507	.364964
2.75	7.5625	1.65831	5.24404	20.7969	1.40102	2.51841	6.50296	.363636
2.76	7.6176	1.66132	5.25357	21.0246	1.40272	2.52206	6.51083	.362319
2.77	7.6729	1.66433	5.26308	21.2539	1.40441	2.52570	6.51868	.361011
2.78	7.7284	1.66733	5.27257	21.4850	1.40610	2.52934	6.52652	.359712
2.79	7.7841	1.67033	5.28205	21.7176	1.40778	2.53297	6.53434	.358423
2.80	7.8400	1.67332	5.29150	21.9520	1.40946	2.53659	6.54213	.357143
2.81	7.8961	1.67631	5.30094	22.1880	1.41114	2.54020	6.54991	.355872
2.82	7.9524	1.67929	5.31037	22.4258	1.41281	2.54380	6.55767	.354610
2.83	8.0089	1.68226	5.31977	22.6652	1.41448	2.54740	6.56541	.353357
2.84	8.0656	1.68523	5.32917	22.9063	1.41614	2.55098	6.57314	.352113
2.85	8.1225	1.68819	5.33854	23.1491	1.41780	2.55456	6.58084	.350877
2.86	8.1796	1.69115	5.34790	23.3937	1.41946	2.55813	6.58853	.349650
2.87	8.2369	1.69411	5.35724	23.6399	1.42111	2.56169	6.59620	.348432
2.88	8.2944	1.69706	5.36656	23.8879	1.42276	2.56524	6.60385	.347221
2.89	8.3521	1.70000	5.37587	24.1376	1.42440	2.56878	6.61149	.346021
2.90	8.4100	1.70294	5.38516	24.3890	1.42604	2.57232	6.61911	.344828
2.91	8.4681	1.70587	5.39444	24.6422	1.42768	2.57584	6.62671	.343643
2.92	8.5264	1.70880	5.40370	24.8971	1.42931	2.57936	6.63429	.342466
2.93	8.5849	1.71172	5.41295	25.1538	1.43094	2.58287	6.64185	.341297
2.94	8.6436	1.71464	5.42218	25.4122	1.43257	2.58638	6.64940	.340136
2.95	8.7025	1.71756	5.43139	25.6724	1.43419	2.58987	6.65693	.338983
2.96	8.7616	1.72047	5.44059	25.9343	1.43581	2.59336	6.66444	.337838
2.97	8.8209	1.72337	5.44977	26.1981	1.43743	2.59684	6.67194	.336700
2.98	8.8804	1.72627	5.45894	26.4636	1.43904	2.60031	6.67942	.335570
2.99	8.9401	1.72916	5.46809	26.7309	1.44065	2.60378	6.68688	.334448
3.00	9.0000	1.73205	5.47723	27.0000	1.44225	2.60723	6.69433	.333333
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
3.00	9.0000	1.73205	5.47723	27.0000	1.44225	3.10723	6.69433	.333333
3.01	9.0601	1.73494	5.48635	27.2709	1.44385	3.11068	6.70176	.332226
3.02	9.1204	1.73781	5.49545	27.5436	1.44545	3.11412	6.70917	.331126
3.03	9.1809	1.74069	5.50454	27.8181	1.44704	3.11756	6.71657	.330033
3.04	9.2416	1.74356	5.51362	28.0945	1.44863	3.12098	6.72395	.328947
3.05	9.3025	1.74642	5.52268	28.3726	1.45022	3.12440	6.73132	.327869
3.06	9.3636	1.74929	5.53173	28.6526	1.45180	3.12781	6.73866	.326797
3.07	9.4249	1.75214	5.54076	28.9344	1.45338	3.13121	6.74600	.325733
3.08	9.4864	1.75499	5.54977	29.2181	1.45496	3.13461	6.75331	.324675
3.09	9.5481	1.75784	5.55878	29.5036	1.45653	3.13800	6.76061	.323625
3.10	9.6100	1.76068	5.56776	29.7910	1.45810	3.14138	6.76790	.322581
3.11	9.6721	1.76352	5.57674	30.0802	1.45967	3.14475	6.77517	.321543
3.12	9.7344	1.76635	5.58570	30.3713	1.46123	3.14812	6.78242	.320513
3.13	9.7969	1.76918	5.59464	30.6643	1.46279	3.15148	6.78966	.319489
3.14	9.8596	1.77200	5.60357	30.9591	1.46434	3.15483	6.79688	.318471
3.15	9.9225	1.77482	5.61249	31.2559	1.46590	3.15818	6.80409	.317460
3.16	9.9856	1.77764	5.62139	31.5545	1.46745	3.16152	6.81128	.316456
3.17	10.0489	1.78045	5.63028	31.8550	1.46899	3.16485	6.81846	.315457
3.18	10.1124	1.78326	5.63915	32.1574	1.47054	3.16817	6.82562	.314465
3.19	10.1761	1.78606	5.64801	32.4618	1.47208	3.17149	6.83277	.313480
3.20	10.2400	1.78885	5.65685	32.7680	1.47361	3.17480	6.83990	.312500
3.21	10.3041	1.79165	5.66569	33.0762	1.47515	3.17811	6.84702	.311526
3.22	10.3684	1.79444	5.67450	33.3862	1.47668	3.18140	6.85412	.310559
3.23	10.4329	1.79722	5.68331	33.6983	1.47820	3.18469	6.86121	.309598
3.24	10.4976	1.80000	5.69210	34.0122	1.47973	3.18798	6.86829	.308642
3.25	10.5625	1.80278	5.70088	34.3281	1.48125	3.19125	6.87534	.307692
3.26	10.6276	1.80555	5.70964	34.6460	1.48277	3.19452	6.88239	.306748
3.27	10.6929	1.80831	5.71839	34.9658	1.48428	3.19778	6.88942	.305810
3.28	10.7584	1.81108	5.72713	35.2876	1.48579	3.20104	6.89643	.304878
3.29	10.8241	1.81384	5.73585	35.6113	1.48730	3.20429	6.90344	.303951
3.30	10.8900	1.81659	5.74456	35.9370	1.48881	3.20753	6.91042	.303030
3.31	10.9561	1.81934	5.75326	36.2647	1.49031	3.21077	6.91740	.302115
3.32	11.0224	1.82209	5.76194	36.5944	1.49181	3.21400	6.92436	.301205
3.33	11.0889	1.82483	5.77062	36.9260	1.49330	3.21722	6.93130	.300300
3.34	11.1556	1.82757	5.77927	37.2597	1.49480	3.22044	6.93823	.299401
3.35	11.2225	1.83030	5.78792	37.5954	1.49629	3.22365	6.94515	.298507
3.36	11.2896	1.83303	5.79655	37.9331	1.49777	3.22686	6.95205	.297619
3.37	11.3569	1.83576	5.80517	38.2728	1.49926	3.23006	6.95894	.296736
3.38	11.4244	1.83848	5.81378	38.6145	1.50074	3.23325	6.96582	.295858
3.39	11.4921	1.84120	5.82237	38.9582	1.50222	3.23643	6.97268	.294985
3.40	11.5600	1.84391	5.83095	39.3040	1.50369	3.23961	6.97953	.294118
3.41	11.6281	1.84662	5.83952	39.6518	1.50517	3.24278	6.98637	.293255
3.42	11.6964	1.84932	5.84808	40.0017	1.50664	3.24595	6.99319	.292398
3.43	11.7649	1.85203	5.85662	40.3536	1.50810	3.24911	7.00000	.291545
3.44	11.8336	1.85472	5.86515	40.7076	1.50957	3.25227	7.00680	.290698
3.45	11.9025	1.85742	5.87367	41.0636	1.51103	3.25542	7.01358	.289855
3.46	11.9716	1.86011	5.88218	41.4217	1.51249	3.25856	7.02035	.289017
3.47	12.0409	1.86279	5.89067	41.7819	1.51394	3.26169	7.02711	.288184
3.48	12.1104	1.86548	5.89915	42.1442	1.51540	3.26482	7.03385	.287356
3.49	12.1801	1.86815	5.90762	42.5085	1.51685	3.26795	7.04058	.286533
3.50	12.2500	1.87083	5.91608	42.8750	1.51829	3.27107	7.04730	.285714
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
3.50	12.2500	1.87083	5.91608	42.8750	1.51829	3.27107	7.04730	.285714
3.51	12.3201	1.87350	5.92453	43.2436	1.51974	3.27418	7.05400	.284900
3.52	12.3904	1.87617	5.93296	43.6142	1.52118	3.27729	7.06070	.284091
3.53	12.4609	1.87883	5.94138	43.9870	1.52262	3.28039	7.06738	.283286
3.54	12.5316	1.88149	5.94979	44.3619	1.52406	3.28348	7.07404	.282486
3.55	12.6025	1.88414	5.95819	44.7389	1.52549	3.28657	7.08070	.281690
3.56	12.6736	1.88680	5.96657	45.1180	1.52692	3.28965	7.08734	.280899
3.57	12.7449	1.88944	5.97495	45.4993	1.52835	3.29273	7.09397	.280112
3.58	12.8164	1.89209	5.98331	45.8827	1.52978	3.29580	7.10059	.279330
3.59	12.8881	1.89473	5.99166	46.2683	1.53120	3.29887	7.10719	.278552
3.60	12.9600	1.89737	6.00000	46.6560	1.53262	3.30193	7.11379	.277778
3.61	13.0321	1.90000	6.00833	47.0459	1.53404	3.30498	7.12037	.277008
3.62	13.1044	1.90263	6.01664	47.4379	1.53545	3.30803	7.12694	.276243
3.63	13.1769	1.90526	6.02495	47.8321	1.53686	3.31107	7.13349	.275482
3.64	13.2496	1.90788	6.03324	48.2285	1.53827	3.31411	7.14004	.274725
3.65	13.3225	1.91050	6.04152	48.6271	1.53968	3.31714	7.14657	.273973
3.66	13.3956	1.91311	6.04979	49.0279	1.54109	3.32017	7.15309	.273224
3.67	13.4689	1.91572	6.05805	49.4309	1.54249	3.32319	7.15960	.272480
3.68	13.5424	1.91833	6.06630	49.8360	1.54389	3.32621	7.16610	.271739
3.69	13.6161	1.92094	6.07454	50.2434	1.54529	3.32922	7.17258	.271003
3.70	13.6900	1.92354	6.08276	50.6530	1.54668	3.33222	7.17905	.270270
3.71	13.7641	1.92614	6.09098	51.0648	1.54807	3.33522	7.18552	.269542
3.72	13.8384	1.92873	6.09918	51.4788	1.54946	3.33822	7.19197	.268817
3.73	13.9129	1.93132	6.10737	51.8951	1.55085	3.34120	7.19840	.268097
3.74	13.9876	1.93391	6.11555	52.3136	1.55223	3.34419	7.20483	.267380
3.75	14.0625	1.93649	6.12372	52.7344	1.55362	3.34716	7.21125	.266667
3.76	14.1376	1.93907	6.13188	53.1574	1.55500	3.35014	7.21765	.265957
3.77	14.2129	1.94165	6.14003	53.5826	1.55637	3.35310	7.22405	.265252
3.78	14.2884	1.94422	6.14817	54.0102	1.55775	3.35607	7.23043	.264550
3.79	14.3641	1.94679	6.15630	54.4399	1.55912	3.35902	7.23680	.263852
3.80	14.4400	1.94936	6.16441	54.8720	1.56049	3.36198	7.24316	.263158
3.81	14.5161	1.95192	6.17252	55.3063	1.56186	3.36492	7.24950	.262467
3.82	14.5924	1.95448	6.18061	55.7430	1.56322	3.36786	7.25584	.261780
3.83	14.6689	1.95704	6.18870	56.1819	1.56459	3.37080	7.26217	.261097
3.84	14.7456	1.95959	6.19677	56.6231	1.56595	3.37373	7.26848	.260417
3.85	14.8225	1.96214	6.20484	57.0666	1.56731	3.37666	7.27479	.259740
3.86	14.8996	1.96469	6.21289	57.5125	1.56866	3.37958	7.28108	.259067
3.87	14.9769	1.96723	6.22093	57.9606	1.57001	3.38249	7.28736	.258398
3.88	15.0544	1.96977	6.22896	58.4111	1.57137	3.38540	7.29363	.257732
3.89	15.1321	1.97231	6.23699	58.8639	1.57271	3.38831	7.29989	.257069
3.90	15.2100	1.97484	6.24500	59.3190	1.57406	3.39121	7.30614	.256410
3.91	15.2881	1.97737	6.25300	59.7765	1.57541	3.39411	7.31238	.255754
3.92	15.3664	1.97990	6.26099	60.2363	1.57675	3.39700	7.31861	.255102
3.93	15.4449	1.98242	6.26897	60.6985	1.57809	3.39988	7.32483	.254453
3.94	15.5236	1.98494	6.27694	61.1630	1.57942	3.40277	7.33104	.253807
3.95	15.6025	1.98746	6.28490	61.6299	1.58076	3.40564	7.33723	.253165
3.96	15.6816	1.98997	6.29285	62.0991	1.58209	3.40851	7.34342	.252525
3.97	15.7609	1.99249	6.30079	62.5708	1.58342	3.41138	7.34960	.251889
3.98	15.8404	1.99499	6.30872	63.0448	1.58475	3.41424	7.35576	.251256
3.99	15.9201	1.99750	6.31664	63.5212	1.58608	3.41710	7.36192	.250627
4.00	16.0000	2.00000	6.32456	64.0000	1.58740	3.41995	7.36806	.250000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
4.00	16.0000	2.00000	6.32456	64.0000	1.58740	3.41995	7.36806	.250000
4.01	16.0801	2.00250	6.33246	64.4812	1.58872	3.42280	7.37420	.249377
4.02	16.1604	2.00499	6.34035	64.9648	1.59004	3.42564	7.38032	.248756
4.03	16.2409	2.00749	6.34823	65.4508	1.59136	3.42848	7.38644	.248139
4.04	16.3216	2.00998	6.35610	65.9393	1.59267	3.43131	7.39254	.247525
4.05	16.4025	2.01246	6.36396	66.4301	1.59399	3.43414	7.39864	.246914
4.06	16.4836	2.01494	6.37181	66.9234	1.59530	3.43697	7.40472	.246305
4.07	16.5649	2.01742	6.37966	67.4191	1.59661	3.43979	7.41080	.245700
4.08	16.6464	2.01990	6.38749	67.9173	1.59791	3.44260	7.41686	.245098
4.09	16.7281	2.02237	6.39531	68.4179	1.59922	3.44541	7.42291	.244499
4.10	16.8100	2.02485	6.40312	68.9210	1.60052	3.44822	7.42896	.243902
4.11	16.8921	2.02731	6.41093	69.4265	1.60182	3.45102	7.43499	.243309
4.12	16.9744	2.02978	6.41872	69.9345	1.60312	3.45382	7.44102	.242718
4.13	17.0569	2.03224	6.42651	70.4450	1.60441	3.45661	7.44703	.242131
4.14	17.1396	2.03470	6.43428	70.9579	1.60571	3.45939	7.45304	.241546
4.15	17.2225	2.03715	6.44205	71.4734	1.60700	3.46218	7.45904	.240964
4.16	17.3056	2.03961	6.44981	71.9913	1.60829	3.46496	7.46502	.240385
4.17	17.3889	2.04206	6.45755	72.5117	1.60958	3.46773	7.47100	.239808
4.18	17.4724	2.04450	6.46529	73.0346	1.61086	3.47050	7.47697	.239234
4.19	17.5561	2.04695	6.47302	73.5601	1.61215	3.47327	7.48292	.238663
4.20	17.6400	2.04939	6.48074	74.0880	1.61343	3.47603	7.48887	.238095
4.21	17.7241	2.05183	6.48845	74.6185	1.61471	3.47878	7.49481	.237530
4.22	17.8084	2.05426	6.49615	75.1514	1.61599	3.48154	7.50074	.236967
4.23	17.8929	2.05670	6.50384	75.6870	1.61726	3.48428	7.50666	.236407
4.24	17.9776	2.05913	6.51153	76.2250	1.61853	3.48703	7.51257	.235849
4.25	18.0625	2.06155	6.51920	76.7656	1.61981	3.48977	7.51847	.235294
4.26	18.1476	2.06398	6.52687	77.3088	1.62108	3.49250	7.52437	.234742
4.27	18.2329	2.06640	6.53452	77.8545	1.62234	3.49523	7.53025	.234192
4.28	18.3184	2.06882	6.54217	78.4028	1.62361	3.49796	7.53612	.233645
4.29	18.4041	2.07123	6.54981	78.9536	1.62487	3.50068	7.54199	.233100
4.30	18.4900	2.07364	6.55744	79.5070	1.62613	3.50340	7.54784	.232558
4.31	18.5761	2.07605	6.56506	80.0630	1.62739	3.50611	7.55369	.232019
4.32	18.6624	2.07846	6.57267	80.6216	1.62865	3.50882	7.55953	.231481
4.33	18.7489	2.08087	6.58027	81.1827	1.62991	3.51153	7.56535	.230947
4.34	18.8356	2.08327	6.58787	81.7465	1.63116	3.51423	7.57117	.230415
4.35	18.9225	2.08567	6.59545	82.3129	1.63241	3.51692	7.57698	.229885
4.36	19.0096	2.08806	6.60303	82.8819	1.63366	3.51962	7.58279	.229358
4.37	19.0969	2.09045	6.61060	83.4535	1.63491	3.52231	7.58858	.228833
4.38	19.1844	2.09284	6.61816	84.0277	1.63619	3.52499	7.59436	.228311
4.39	19.2721	2.09523	6.62571	84.6045	1.63740	3.52767	7.60014	.227790
4.40	19.3600	2.09762	6.63325	85.1840	1.63864	3.53035	7.60590	.227273
4.41	19.4481	2.10000	6.64078	85.7661	1.63988	3.53302	7.61166	.226757
4.42	19.5364	2.10238	6.64831	86.3509	1.64112	3.53569	7.61741	.226244
4.43	19.6249	2.10476	6.65582	86.9383	1.64236	3.53835	7.62315	.225734
4.44	19.7136	2.10713	6.66333	87.5284	1.64359	3.54101	7.62888	.225225
4.45	19.8025	2.10950	6.67083	88.1211	1.64483	3.54367	7.63461	.224719
4.46	19.8916	2.11187	6.67832	88.7165	1.64606	3.54632	7.64032	.224215
4.47	19.9809	2.11424	6.68581	89.3146	1.64729	3.54897	7.64603	.223714
4.48	20.0704	2.11660	6.69328	89.9154	1.64851	3.55162	7.65172	.223214
4.49	20.1601	2.11896	6.70075	90.5188	1.64974	3.55426	7.65741	.222717
4.50	20.2500	2.12132	6.70820	91.1250	1.65096	3.55689	7.66309	.222222
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
4.50	20.2500	2.12132	6.70820	91.1250	1.65096	3.55689	7.66309	.222222
4.51	20.3401	2.12368	6.71565	91.7339	1.65219	3.55953	7.66877	.221729
4.52	20.4304	2.12603	6.72309	92.3454	1.65341	3.56215	7.67443	.221239
4.53	20.5209	2.12838	6.73053	92.9597	1.65462	3.56478	7.68009	.220751
4.54	20.6116	2.13073	6.73795	93.5767	1.65584	3.56740	7.68573	.220264
4.55	20.7025	2.13307	6.74537	94.1964	1.65706	3.57002	7.69137	.219780
4.56	20.7936	2.13542	6.75278	94.8188	1.65827	3.57263	7.69700	.219298
4.57	20.8849	2.13776	6.76018	95.4440	1.65948	3.57524	7.70262	.218818
4.58	20.9764	2.14009	6.76757	96.0719	1.66069	3.57785	7.70824	.218341
4.59	21.0681	2.14243	6.77495	96.7026	1.66190	3.58045	7.71384	.217865
4.60	21.1600	2.14476	6.78233	97.3360	1.66310	3.58305	7.71944	.217391
4.61	21.2521	2.14709	6.78970	97.9722	1.66431	3.58564	7.72503	.216920
4.62	21.3444	2.14942	6.79706	98.6111	1.66551	3.58823	7.73061	.216450
4.63	21.4369	2.15174	6.80441	99.2528	1.66671	3.59082	7.73619	.215983
4.64	21.5296	2.15407	6.81175	99.8973	1.66791	3.59340	7.74175	.215517
4.65	21.6225	2.15639	6.81909	100.545	1.66911	3.59598	7.74731	.215054
4.66	21.7156	2.15870	6.82642	101.195	1.67030	3.59856	7.75286	.214592
4.67	21.8089	2.16102	6.83374	101.848	1.67150	3.60113	7.75840	.214133
4.68	21.9024	2.16333	6.84105	102.503	1.67269	3.60370	7.76394	.213675
4.69	21.9961	2.16564	6.84836	103.162	1.67388	3.60626	7.76946	.213220
4.70	22.0900	2.16795	6.85565	103.823	1.67507	3.60883	7.77498	.212766
4.71	22.1841	2.17025	6.86294	104.487	1.67626	3.61138	7.78049	.212314
4.72	22.2784	2.17256	6.87023	105.154	1.67744	3.61394	7.78599	.211864
4.73	22.3729	2.17486	6.87750	105.824	1.67863	3.61649	7.79149	.211416
4.74	22.4676	2.17715	6.88477	106.496	1.67981	3.61903	7.79697	.210970
4.75	22.5625	2.17945	6.89202	107.172	1.68099	3.62158	7.80245	.210526
4.76	22.6576	2.18174	6.89928	107.850	1.68217	3.62412	7.80793	.210084
4.77	22.7529	2.18403	6.90655	108.531	1.68334	3.62665	7.81339	.209644
4.78	22.8484	2.18632	6.91375	109.215	1.68452	3.62919	7.81885	.209205
4.79	22.9441	2.18861	6.92098	109.902	1.68569	3.63172	7.82429	.208768
4.80	23.0400	2.19089	6.92820	110.592	1.68687	3.63424	7.82974	.208333
4.81	23.1361	2.19317	6.93542	111.285	1.68804	3.63676	7.83517	.207900
4.82	23.2324	2.19545	6.94262	111.980	1.68920	3.63928	7.84059	.207469
4.83	23.3289	2.19773	6.94982	112.679	1.69037	3.64180	7.84601	.207039
4.84	23.4256	2.20000	6.95701	113.380	1.69154	3.64431	7.85142	.206612
4.85	23.5225	2.20227	6.96419	114.084	1.69270	3.64682	7.85683	.206186
4.86	23.6196	2.20454	6.97137	114.791	1.69386	3.64932	7.86222	.205761
4.87	23.7169	2.20681	6.97854	115.501	1.69503	3.65182	7.86761	.205339
4.88	23.8144	2.20907	6.98570	116.214	1.69619	3.65432	7.87299	.204918
4.89	23.9121	2.21133	6.99285	116.930	1.69734	3.65681	7.87837	.204499
4.90	24.0100	2.21359	7.00000	117.649	1.69850	3.65931	7.88374	.204082
4.91	24.1081	2.21585	7.00714	118.371	1.69965	3.66179	7.88909	.203666
4.92	24.2064	2.21811	7.01427	119.095	1.70081	3.66428	7.89445	.203252
4.93	24.3049	2.22036	7.02140	119.823	1.70196	3.66676	7.89979	.202840
4.94	24.4036	2.22261	7.02851	120.554	1.70311	3.66924	7.90513	.202429
4.95	24.5025	2.22486	7.03562	121.287	1.70426	3.67171	7.91046	.202020
4.96	24.6016	2.22711	7.04273	122.024	1.70540	3.67418	7.91578	.201613
4.97	24.7009	2.22935	7.04982	122.763	1.70655	3.67665	7.92110	.201207
4.98	24.8004	2.23159	7.05691	123.506	1.70769	3.67911	7.92641	.200803
4.99	24.9001	2.23383	7.06399	124.251	1.70884	3.68157	7.93171	.200401
5.00	25.0000	2.23607	7.07107	125.000	1.70998	3.68403	7.93701	.200000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
5.00	25.0000	2.23607	7.07107	125.000	1.70998	3.68403	7.93701	.200000
5.01	25.1001	2.23830	7.07844	125.752	1.71112	3.68649	7.94229	.199601
5.02	25.2004	2.24054	7.08520	126.506	1.71225	3.68894	7.94757	.199203
5.03	25.3009	2.24277	7.09225	127.264	1.71339	3.69138	7.95285	.198807
5.04	25.4016	2.24499	7.09930	128.024	1.71452	3.69383	7.95811	.198413
5.05	25.5025	2.24722	7.10634	128.788	1.71566	3.69627	7.96337	.198020
5.06	25.6036	2.24944	7.11337	129.554	1.71679	3.69871	7.96863	.197628
5.07	25.7049	2.25167	7.12039	130.324	1.71792	3.70114	7.97387	.197239
5.08	25.8064	2.25389	7.12741	131.097	1.71905	3.70357	7.97911	.196850
5.09	25.9081	2.25610	7.13442	131.872	1.72017	3.70600	7.98434	.196464
5.10	26.0100	2.25832	7.14143	132.651	1.72130	3.70843	7.98957	.196078
5.11	26.1121	2.26053	7.14843	133.433	1.72242	3.71085	7.99479	.195695
5.12	26.2144	2.26274	7.15542	134.218	1.72355	3.71327	8.00000	.195312
5.13	26.3169	2.26495	7.16240	135.006	1.72467	3.71569	8.00520	.194932
5.14	26.4196	2.26716	7.16938	135.797	1.72579	3.71810	8.01040	.194553
5.15	26.5225	2.26936	7.17635	136.591	1.72691	3.72051	8.01559	.194175
5.16	26.6256	2.27156	7.18331	137.388	1.72802	3.72292	8.02078	.193798
5.17	26.7289	2.27376	7.19027	138.188	1.72914	3.72532	8.02596	.193424
5.18	26.8324	2.27596	7.19722	138.992	1.73025	3.72772	8.03113	.193050
5.19	26.9361	2.27816	7.20417	139.798	1.73137	3.73012	8.03629	.192678
5.20	27.0400	2.28035	7.21110	140.608	1.73248	3.73251	8.04145	.192308
5.21	27.1441	2.28254	7.21803	141.421	1.73359	3.73490	8.04660	.191939
5.22	27.2484	2.28473	7.22496	142.237	1.73470	3.73729	8.05175	.191571
5.23	27.3529	2.28692	7.23187	143.056	1.73580	3.73968	8.05689	.191205
5.24	27.4576	2.28910	7.23878	143.878	1.73691	3.74206	8.06202	.190840
5.25	27.5625	2.29129	7.24569	144.703	1.73801	3.74443	8.06714	.190476
5.26	27.6676	2.29347	7.25259	145.532	1.73912	3.74681	8.07226	.190114
5.27	27.7729	2.29565	7.25948	146.363	1.74022	3.74918	8.07737	.189753
5.28	27.8784	2.29783	7.26636	147.198	1.74132	3.75155	8.08248	.189394
5.29	27.9841	2.30000	7.27324	148.036	1.74242	3.75392	8.08758	.189036
5.30	28.0900	2.30217	7.28011	148.877	1.74351	3.75629	8.09267	.188679
5.31	28.1961	2.30434	7.28697	149.721	1.74461	3.75865	8.09776	.188324
5.32	28.3024	2.30651	7.29383	150.569	1.74570	3.76101	8.10284	.187970
5.33	28.4089	2.30868	7.30068	151.419	1.74680	3.76336	8.10791	.187617
5.34	28.5156	2.31084	7.30753	152.273	1.74789	3.76571	8.11298	.187266
5.35	28.6225	2.31301	7.31437	153.130	1.74898	3.76806	8.11804	.186916
5.36	28.7296	2.31517	7.32120	153.991	1.75007	3.77041	8.12310	.186567
5.37	28.8369	2.31733	7.32803	154.854	1.75116	3.77275	8.12814	.186220
5.38	28.9444	2.31948	7.33485	155.721	1.75224	3.77509	8.13319	.185874
5.39	29.0521	2.32164	7.34166	156.591	1.75333	3.77743	8.13822	.185529
5.40	29.1600	2.32379	7.34847	157.464	1.75441	3.77976	8.14325	.185185
5.41	29.2681	2.32594	7.35527	158.340	1.75549	3.78209	8.14828	.184843
5.42	29.3764	2.32809	7.36206	159.220	1.75657	3.78442	8.15329	.184502
5.43	29.4849	2.33024	7.36885	160.103	1.75765	3.78675	8.15831	.184162
5.44	29.5936	2.33238	7.37561	160.989	1.75873	3.78907	8.16331	.183824
5.45	29.7025	2.33452	7.38241	161.879	1.75981	3.79139	8.16831	.183486
5.46	29.8116	2.33666	7.38918	162.771	1.76088	3.79371	8.17330	.183150
5.47	29.9209	2.33880	7.39591	163.667	1.76196	3.79603	8.17829	.182815
5.48	30.0304	2.34094	7.40270	164.567	1.76303	3.79834	8.18327	.182482
5.49	30.1401	2.34307	7.40945	165.469	1.76410	3.80065	8.18824	.182149
5.50	30.2500	2.34521	7.41620	166.375	1.76517	3.80295	8.19321	.181818
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
5.50	30.2500	2.34521	7.41620	166.375	1.76517	3.80295	8.19321	.181818
5.51	30.3601	2.34734	7.42294	167.284	1.76624	3.80526	8.19818	.181488
5.52	30.4704	2.34947	7.42967	168.197	1.76731	3.80756	8.20313	.181159
5.53	30.5809	2.35160	7.43640	169.112	1.76838	3.80985	8.20808	.180832
5.54	30.6916	2.35372	7.44312	170.031	1.76944	3.81215	8.21303	.180505
5.55	30.8025	2.35584	7.44983	170.954	1.77051	3.81444	8.21797	.180180
5.56	30.9136	2.35797	7.45654	171.880	1.77157	3.81673	8.22290	.179856
5.57	31.0249	2.36008	7.46324	172.809	1.77263	3.81902	8.22783	.179533
5.58	31.1364	2.36220	7.46994	173.741	1.77369	3.82130	8.23275	.179211
5.59	31.2481	2.36432	7.47663	174.677	1.77475	3.82358	8.23766	.178891
5.60	31.3600	2.36643	7.48331	175.616	1.77581	3.82586	8.24257	.178571
5.61	31.4721	2.36854	7.48999	176.558	1.77686	3.82814	8.24747	.178253
5.62	31.5844	2.37065	7.49667	177.504	1.77792	3.83041	8.25237	.177936
5.63	31.6969	2.37276	7.50333	178.454	1.77897	3.83268	8.25726	.177620
5.64	31.8096	2.37487	7.50999	179.406	1.78003	3.83495	8.26215	.177305
5.65	31.9225	2.37697	7.51665	180.362	1.78108	3.83722	8.26703	.176991
5.66	32.0356	2.37908	7.52330	181.321	1.78213	3.83948	8.27190	.176678
5.67	32.1489	2.38118	7.52994	182.284	1.78318	3.84174	8.27677	.176367
5.68	32.2624	2.38328	7.53658	183.250	1.78422	3.84399	8.28164	.176056
5.69	32.3761	2.38537	7.54321	184.220	1.78527	3.84625	8.28649	.175747
5.70	32.4900	2.38747	7.54983	185.193	1.78632	3.84850	8.29134	.175439
5.71	32.6041	2.38956	7.55645	186.169	1.78736	3.85075	8.29619	.175131
5.72	32.7184	2.39165	7.56307	187.149	1.78840	3.85300	8.30103	.174825
5.73	32.8329	2.39374	7.56968	188.133	1.78944	3.85524	8.30587	.174520
5.74	32.9476	2.39583	7.57628	189.119	1.79048	3.85748	8.31069	.174216
5.75	33.0625	2.39792	7.58288	190.109	1.79152	3.85972	8.31552	.173913
5.76	33.1776	2.40000	7.58947	191.103	1.79256	3.86196	8.32034	.173611
5.77	33.2929	2.40208	7.59605	192.100	1.79360	3.86419	8.32515	.173310
5.78	33.4084	2.40416	7.60263	193.101	1.79463	3.86642	8.32995	.173010
5.79	33.5241	2.40624	7.60920	194.105	1.79567	3.86865	8.33476	.172712
5.80	33.6400	2.40832	7.61577	195.112	1.79670	3.87088	8.33955	.172414
5.81	33.7561	2.41039	7.62234	196.123	1.79773	3.87310	8.34433	.172117
5.82	33.8724	2.41247	7.62889	197.137	1.79876	3.87532	8.34911	.171821
5.83	33.9889	2.41454	7.63544	198.155	1.79979	3.87754	8.35390	.171527
5.84	34.1056	2.41661	7.64199	199.177	1.80082	3.87975	8.35868	.171233
5.85	34.2225	2.41868	7.64853	200.202	1.80185	3.88197	8.36345	.170940
5.86	34.3396	2.42074	7.65506	201.230	1.80288	3.88418	8.36821	.170649
5.87	34.4569	2.42281	7.66159	202.262	1.80390	3.88639	8.37297	.170358
5.88	34.5744	2.42487	7.66812	203.297	1.80492	3.88859	8.37772	.170068
5.89	34.6921	2.42693	7.67463	204.336	1.80595	3.89080	8.38247	.169779
5.90	34.8100	2.42899	7.68115	205.379	1.80697	3.89300	8.38721	.169492
5.91	34.9281	2.43105	7.68765	206.425	1.80799	3.89519	8.39194	.169205
5.92	35.0464	2.43311	7.69415	207.475	1.80901	3.89739	8.39667	.168919
5.93	35.1649	2.43516	7.70065	208.528	1.81003	3.89958	8.40140	.168634
5.94	35.2836	2.43721	7.70714	209.585	1.81104	3.90177	8.40612	.168350
5.95	35.4025	2.43926	7.71362	210.645	1.81206	3.90396	8.41083	.168067
5.96	35.5216	2.44131	7.72010	211.709	1.81307	3.90615	8.41554	.167785
5.97	35.6409	2.44336	7.72658	212.776	1.81409	3.90833	8.42025	.167504
5.98	35.7604	2.44540	7.73305	213.847	1.81510	3.91051	8.42494	.167224
5.99	35.8801	2.44745	7.73951	214.922	1.81611	3.91269	8.42964	.166945
6.00	36.0000	2.44949	7.74597	216.000	1.81712	3.91487	8.43433	.166667
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
6.00	36.0000	2.44949	7.74597	216.000	1.81712	3.91487	8.43433	.166667
6.01	36.1201	2.45153	7.75242	217.082	1.81813	3.91704	8.43901	.166389
6.02	36.2404	2.45357	7.75887	218.167	1.81914	3.91921	8.44369	.166113
6.03	36.3609	2.45561	7.76531	219.256	1.82014	3.92138	8.44836	.165837
6.04	36.4816	2.45764	7.77174	220.349	1.82115	3.92355	8.45303	.165563
6.05	36.6025	2.45967	7.77817	221.445	1.82215	3.92571	8.45769	.165289
6.06	36.7236	2.46171	7.78460	222.545	1.82316	3.92787	8.46235	.165017
6.07	36.8449	2.46374	7.79102	223.649	1.82416	3.93003	8.46700	.164745
6.08	36.9664	2.46577	7.79744	224.756	1.82516	3.93219	8.47165	.164474
6.09	37.0881	2.46779	7.80385	225.867	1.82616	3.93434	8.47629	.164204
6.10	37.2100	2.46982	7.81025	226.981	1.82716	3.93650	8.48093	.163934
6.11	37.3321	2.47184	7.81665	228.099	1.82816	3.93865	8.48556	.163666
6.12	37.4544	2.47386	7.82304	229.221	1.82915	3.94079	8.49018	.163399
6.13	37.5769	2.47588	7.82943	230.346	1.83015	3.94294	8.49481	.163132
6.14	37.6996	2.47790	7.83582	231.476	1.83115	3.94508	8.49942	.162866
6.15	37.8225	2.47992	7.84219	232.608	1.83214	3.94722	8.50403	.162602
6.16	37.9456	2.48193	7.84857	233.745	1.83313	3.94936	8.50864	.162338
6.17	38.0689	2.48395	7.85493	234.885	1.83412	3.95150	8.51324	.162075
6.18	38.1924	2.48596	7.86130	236.029	1.83511	3.95363	8.51784	.161812
6.19	38.3161	2.48797	7.86766	237.177	1.83610	3.95576	8.52243	.161551
6.20	38.4400	2.48998	7.87401	238.328	1.83709	3.95789	8.52702	.161290
6.21	38.5641	2.49199	7.88036	239.483	1.83808	3.96002	8.53160	.161031
6.22	38.6884	2.49399	7.88670	240.642	1.83906	3.96214	8.53618	.160772
6.23	38.8129	2.49600	7.89303	241.804	1.84005	3.96427	8.54075	.160514
6.24	38.9376	2.49800	7.89937	242.971	1.84103	3.96638	8.54532	.160256
6.25	39.0625	2.50000	7.90569	244.141	1.84202	3.96850	8.54988	.160000
6.26	39.1876	2.50200	7.91202	245.314	1.84300	3.97062	8.55444	.159744
6.27	39.3129	2.50400	7.91833	246.492	1.84398	3.97273	8.55899	.159490
6.28	39.4384	2.50599	7.92465	247.673	1.84496	3.97484	8.56354	.159236
6.29	39.5641	2.50799	7.93095	248.858	1.84594	3.97695	8.56808	.158983
6.30	39.6900	2.50998	7.93725	250.047	1.84691	3.97906	8.57262	.158730
6.31	39.8161	2.51197	7.94355	251.240	1.84789	3.98116	8.57715	.158479
6.32	39.9424	2.51396	7.94984	252.436	1.84887	3.98326	8.58168	.158228
6.33	40.0689	2.51595	7.95613	253.636	1.84984	3.98536	8.58620	.157978
6.34	40.1956	2.51794	7.96241	254.840	1.85082	3.98746	8.59072	.157729
6.35	40.3225	2.51992	7.96869	256.048	1.85179	3.98956	8.59524	.157480
6.36	40.4496	2.52190	7.97496	257.259	1.85276	3.99165	8.59975	.157233
6.37	40.5769	2.52389	7.98123	258.475	1.85373	3.99374	8.60425	.156986
6.38	40.7044	2.52587	7.98749	259.694	1.85470	3.99583	8.60875	.156740
6.39	40.8321	2.52784	7.99375	260.917	1.85567	3.99792	8.61325	.156495
6.40	40.9600	2.52982	8.00000	262.144	1.85664	4.00000	8.61774	.156250
6.41	41.0881	2.53180	8.00625	263.375	1.85760	4.00208	8.62222	.156006
6.42	41.2164	2.53377	8.01249	264.609	1.85857	4.00416	8.62671	.155763
6.43	41.3449	2.53574	8.01873	265.848	1.85953	4.00624	8.63118	.155521
6.44	41.4736	2.53772	8.02496	267.090	1.86050	4.00832	8.63566	.155280
6.45	41.6025	2.53969	8.03119	268.336	1.86146	4.01039	8.64012	.155039
6.46	41.7316	2.54165	8.03741	269.586	1.86242	4.01246	8.64459	.154799
6.47	41.8609	2.54362	8.04363	270.840	1.86338	4.01453	8.64904	.154560
6.48	41.9904	2.54558	8.04984	272.098	1.86434	4.01660	8.65350	.154321
6.49	42.1201	2.54755	8.05605	273.359	1.86530	4.01866	8.65795	.154083
6.50	42.2500	2.54951	8.06226	274.625	1.86626	4.02073	8.66239	.153846
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
6 50	422500	25.4951	8.06726	274.625	1.86626	1.02073	8.66239	.153846
6 51	423801	25.5147	8.06846	275.894	1.86721	1.02279	8.66683	.153610
6 52	425104	25.5343	8.07465	277.168	1.86817	1.02485	8.67127	.153374
6 53	426409	25.5539	8.08084	278.445	1.86912	1.02690	8.67570	.153139
6 54	427716	25.5734	8.08703	279.726	1.87008	1.02896	8.68012	.152905
6 55	429025	25.5930	8.09321	281.011	1.87103	1.03101	8.68455	.152672
6 56	430336	25.6125	8.09938	282.300	1.87198	1.03306	8.68896	.152439
6 57	431649	25.6320	8.10555	283.593	1.87293	1.03511	8.69338	.152207
6 58	432964	25.6515	8.11172	284.890	1.87388	1.03715	8.69778	.151976
6 59	434281	25.6710	8.11788	286.191	1.87483	1.03920	8.70219	.151745
6 60	435600	25.6905	8.12404	287.496	1.87578	1.04124	8.70659	.151515
6 61	436921	25.7099	8.13019	288.805	1.87672	1.04328	8.71098	.151286
6 62	438244	25.7294	8.13634	290.118	1.87767	1.04532	8.71537	.151057
6 63	439569	25.7488	8.14248	291.434	1.87862	1.04735	8.71976	.150830
6 64	440896	25.7682	8.14862	292.755	1.87956	1.04939	8.72414	.150602
6 65	442225	25.7876	8.15475	294.080	1.88050	1.05142	8.72852	.150376
6 66	443556	25.8070	8.16088	295.408	1.88144	1.05345	8.73289	.150150
6 67	444889	25.8263	8.16701	296.741	1.88239	1.05548	8.73726	.149925
6 68	446224	25.8457	8.17313	298.078	1.88333	1.05750	8.74162	.149701
6 69	447561	25.8650	8.17924	299.418	1.88427	1.05953	8.74598	.149477
6 70	448900	25.8844	8.18535	300.763	1.88520	1.06155	8.75034	.149254
6 71	450241	25.9037	8.19146	302.112	1.88614	1.06357	8.75469	.149031
6 72	451584	25.9230	8.19756	303.464	1.88708	1.06559	8.75904	.148810
6 73	452929	25.9423	8.20366	304.821	1.88801	1.06760	8.76338	.148588
6 74	454276	25.9615	8.20975	306.182	1.88895	1.06961	8.76772	.148368
6 75	455625	25.9808	8.21584	307.547	1.88988	1.07163	8.77205	.148148
6 76	456976	26.0000	8.22192	308.916	1.89081	1.07364	8.77638	.147929
6 77	458329	26.0192	8.22800	310.289	1.89175	1.07565	8.78071	.147710
6 78	459684	26.0384	8.23408	311.666	1.89268	1.07767	8.78503	.147493
6 79	461041	26.0576	8.24015	313.047	1.89361	1.07968	8.78935	.147275
6 80	462400	26.0768	8.24621	314.432	1.89454	1.08169	8.79366	.147059
6 81	463761	26.0960	8.25227	315.821	1.89546	1.08369	8.79797	.146843
6 82	465124	26.1151	8.25833	317.215	1.89639	1.08569	8.80227	.146628
6 83	466489	26.1343	8.26438	318.612	1.89732	1.08769	8.80657	.146413
6 84	467856	26.1534	8.27043	320.014	1.89824	1.08968	8.81087	.146199
6 85	469225	26.1725	8.27647	321.419	1.89917	1.09163	8.81516	.145985
6 86	470596	26.1916	8.28251	322.829	1.90009	1.09362	8.81945	.145773
6 87	471969	26.2107	8.28855	324.243	1.90102	1.09561	8.82373	.145560
6 88	473344	26.2298	8.29458	325.661	1.90194	1.09760	8.82801	.145349
6 89	474721	26.2488	8.30060	327.083	1.90286	1.09958	8.83228	.145138
6 90	476100	26.2679	8.30662	328.509	1.90378	1.10157	8.83656	.144928
6 91	477481	26.2869	8.31264	329.939	1.90470	1.10355	8.84082	.144718
6 92	478864	26.3059	8.31865	331.374	1.90562	1.10552	8.84509	.144509
6 93	480249	26.3249	8.32466	332.813	1.90653	1.10750	8.84934	.144300
6 94	481636	26.3439	8.33067	334.255	1.90745	1.10948	8.85360	.144092
6 95	483025	26.3629	8.33667	335.702	1.90837	1.11145	8.85785	.143885
6 96	484416	26.3818	8.34266	337.154	1.90928	1.11342	8.86210	.143678
6 97	485809	26.4008	8.34865	338.609	1.91019	1.11539	8.86634	.143472
6 98	487204	26.4197	8.35464	340.068	1.91111	1.11736	8.87058	.143266
6 99	488601	26.4386	8.36062	341.532	1.91202	1.11932	8.87481	.143062
7 00	490000	26.4575	8.36660	343.000	1.91293	1.12129	8.87904	.142857
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
7.00	49.0000	2.64575	8.36660	343.000	1.91293	4.12129	8.87904	.142857
7.01	49.1401	2.64761	8.37257	344.472	1.91384	4.12325	8.88327	.142653
7.02	49.2804	2.64953	8.37851	345.948	1.91475	4.12521	8.88749	.142450
7.03	49.4209	2.65141	8.38451	347.429	1.91566	4.12716	8.89171	.142248
7.04	49.5616	2.65330	8.39047	348.914	1.91657	4.12912	8.89592	.142045
7.05	49.7025	2.65518	8.39643	350.403	1.91747	4.13107	8.90013	.141844
7.06	49.8436	2.65707	8.40238	351.896	1.91838	4.13303	8.90434	.141643
7.07	49.9849	2.65895	8.40833	353.393	1.91929	4.13498	8.90854	.141443
7.08	50.1264	2.66083	8.41427	354.895	1.92019	4.13693	8.91274	.141243
7.09	50.2681	2.66271	8.42021	356.401	1.92109	4.13887	8.91693	.141044
7.10	50.4100	2.66458	8.42615	357.911	1.92200	4.14082	8.92112	.140845
7.11	50.5521	2.66646	8.43208	359.425	1.92290	4.14276	8.92531	.140647
7.12	50.6944	2.66833	8.43801	360.944	1.92380	4.14470	8.92949	.140449
7.13	50.8369	2.67021	8.44393	362.467	1.92470	4.14664	8.93367	.140252
7.14	50.9796	2.67208	8.44985	363.994	1.92560	4.14858	8.93784	.140056
7.15	51.1225	2.67395	8.45577	365.526	1.92650	4.15052	8.94201	.139860
7.16	51.2656	2.67582	8.46168	367.062	1.92740	4.15245	8.94618	.139665
7.17	51.4089	2.67769	8.46759	368.602	1.92829	4.15438	8.95034	.139470
7.18	51.5524	2.67955	8.47349	370.146	1.92919	4.15631	8.95450	.139276
7.19	51.6961	2.68142	8.47939	371.695	1.93008	4.15824	8.95866	.139082
7.20	51.8400	2.68328	8.48528	373.248	1.93098	4.16017	8.96281	.138889
7.21	51.9841	2.68514	8.49117	374.805	1.93187	4.16209	8.96696	.138696
7.22	52.1284	2.68701	8.49706	376.367	1.93277	4.16402	8.97110	.138504
7.23	52.2729	2.68887	8.50294	377.933	1.93366	4.16594	8.97524	.138313
7.24	52.4176	2.69072	8.50882	379.503	1.93455	4.16786	8.97938	.138122
7.25	52.5625	2.69258	8.51469	381.078	1.93544	4.16978	8.98351	.137931
7.26	52.7076	2.69444	8.52056	382.657	1.93633	4.17169	8.98764	.137741
7.27	52.8529	2.69629	8.52643	384.241	1.93722	4.17361	8.99176	.137552
7.28	52.9984	2.69815	8.53229	385.828	1.93810	4.17552	8.99588	.137363
7.29	53.1441	2.70000	8.53815	387.420	1.93899	4.17743	9.00000	.137174
7.30	53.2900	2.70185	8.54400	389.017	1.93988	4.17934	9.00411	.136986
7.31	53.4361	2.70370	8.54985	390.618	1.94076	4.18125	9.00822	.136799
7.32	53.5824	2.70555	8.55570	392.223	1.94165	4.18315	9.01233	.136612
7.33	53.7289	2.70740	8.56154	393.833	1.94253	4.18506	9.01643	.136426
7.34	53.8756	2.70924	8.56738	395.447	1.94341	4.18696	9.02053	.136240
7.35	54.0225	2.71109	8.57321	397.065	1.94430	4.18886	9.02462	.136054
7.36	54.1696	2.71293	8.57904	398.688	1.94518	4.19076	9.02871	.135870
7.37	54.3169	2.71477	8.58487	400.316	1.94606	4.19266	9.03280	.135685
7.38	54.4644	2.71662	8.59069	401.947	1.94694	4.19455	9.03689	.135501
7.39	54.6121	2.71846	8.59651	403.583	1.94782	4.19644	9.04097	.135318
7.40	54.7600	2.72029	8.60233	405.224	1.94870	4.19834	9.04504	.135135
7.41	54.9081	2.72213	8.60814	406.869	1.94957	4.20023	9.04911	.134953
7.42	55.0564	2.72397	8.61394	408.518	1.95045	4.20212	9.05318	.134771
7.43	55.2049	2.72580	8.61974	410.172	1.95132	4.20400	9.05725	.134590
7.44	55.3536	2.72764	8.62554	411.831	1.95220	4.20589	9.06131	.134409
7.45	55.5025	2.72947	8.63134	413.494	1.95307	4.20777	9.06537	.134228
7.46	55.6516	2.73130	8.63713	415.161	1.95395	4.20965	9.06942	.134048
7.47	55.8009	2.73313	8.64292	416.833	1.95482	4.21153	9.07347	.133869
7.48	55.9504	2.73496	8.64870	418.509	1.95569	4.21341	9.07752	.133690
7.49	56.1001	2.73679	8.65448	420.190	1.95656	4.21529	9.08156	.133511
7.50	56.2500	2.73861	8.66025	421.875	1.95743	4.21716	9.08560	.133333
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
7.50	56.2500	2.73861	8.66025	421.875	1.95743	4.21716	9.08560	.133333
7.51	56.4001	2.74044	8.66603	423.565	1.95830	4.21904	9.08964	.133156
7.52	56.5504	2.74226	8.67179	425.259	1.95917	4.22091	9.09367	.132979
7.53	56.7009	2.74408	8.67756	426.958	1.96004	4.22278	9.09770	.132802
7.54	56.8516	2.74591	8.68332	428.661	1.96091	4.22465	9.10173	.132626
7.55	57.0025	2.74773	8.68907	430.369	1.96177	4.22651	9.10575	.132450
7.56	57.1536	2.74955	8.69483	432.081	1.96264	4.22838	9.10977	.132275
7.57	57.3049	2.75136	8.70057	433.798	1.96350	4.23024	9.11378	.132100
7.58	57.4564	2.75318	8.70632	435.520	1.96437	4.23210	9.11779	.131926
7.59	57.6081	2.75500	8.71206	437.245	1.96523	4.23396	9.12180	.131752
7.60	57.7600	2.75681	8.71780	438.976	1.96610	4.23582	9.12581	.131579
7.61	57.9121	2.75862	8.72353	440.711	1.96696	4.23768	9.12981	.131406
7.62	58.0644	2.76043	8.72926	442.451	1.96782	4.23954	9.13380	.131234
7.63	58.2169	2.76225	8.73499	444.195	1.96868	4.24139	9.13780	.131062
7.64	58.3696	2.76405	8.74071	445.944	1.96954	4.24324	9.14179	.130890
7.65	58.5225	2.76586	8.74643	447.697	1.97040	4.24509	9.14577	.130719
7.66	58.6756	2.76767	8.75214	449.455	1.97126	4.24694	9.14976	.130548
7.67	58.8289	2.76948	8.75785	451.218	1.97211	4.24879	9.15374	.130378
7.68	58.9824	2.77128	8.76356	452.985	1.97297	4.25063	9.15771	.130208
7.69	59.1361	2.77308	8.76926	454.757	1.97383	4.25248	9.16169	.130039
7.70	59.2900	2.77489	8.77496	456.533	1.97468	4.25432	9.16566	.129870
7.71	59.4441	2.77669	8.78066	458.314	1.97554	4.25616	9.16962	.129702
7.72	59.5984	2.77849	8.78635	460.100	1.97639	4.25800	9.17359	.129534
7.73	59.7529	2.78029	8.79204	461.890	1.97724	4.25984	9.17754	.129366
7.74	59.9076	2.78209	8.79773	463.685	1.97809	4.26167	9.18150	.129199
7.75	60.0625	2.78388	8.80341	465.484	1.97895	4.26351	9.18545	.129032
7.76	60.2176	2.78568	8.80909	467.289	1.97980	4.26534	9.18940	.128866
7.77	60.3729	2.78747	8.81476	469.097	1.98065	4.26717	9.19335	.128700
7.78	60.5284	2.78927	8.82043	470.911	1.98150	4.26900	9.19729	.128535
7.79	60.6841	2.79106	8.82610	472.729	1.98234	4.27083	9.20123	.128370
7.80	60.8400	2.79285	8.83176	474.552	1.98319	4.27266	9.20516	.128205
7.81	60.9961	2.79464	8.83742	476.380	1.98404	4.27448	9.20910	.128041
7.82	61.1524	2.79643	8.84308	478.212	1.98489	4.27631	9.21302	.127877
7.83	61.3089	2.79821	8.84873	480.049	1.98573	4.27813	9.21695	.127714
7.84	61.4656	2.80000	8.85438	481.890	1.98658	4.27995	9.22087	.127551
7.85	61.6225	2.80179	8.86002	483.737	1.98742	4.28177	9.22479	.127389
7.86	61.7796	2.80357	8.86566	485.588	1.98826	4.28359	9.22871	.127226
7.87	61.9369	2.80535	8.87130	487.443	1.98911	4.28540	9.23262	.127065
7.88	62.0944	2.80713	8.87694	489.304	1.98995	4.28722	9.23653	.126904
7.89	62.2521	2.80891	8.88257	491.169	1.99079	4.28903	9.24043	.126743
7.90	62.4100	2.81069	8.88819	493.039	1.99163	4.29084	9.24434	.126582
7.91	62.5681	2.81247	8.89382	494.914	1.99247	4.29265	9.24822	.126422
7.92	62.7264	2.81425	8.89944	496.793	1.99331	4.29446	9.25213	.126263
7.93	62.8849	2.81603	8.90505	498.677	1.99415	4.29627	9.25602	.126103
7.94	63.0436	2.81780	8.91067	500.566	1.99499	4.29807	9.25991	.125945
7.95	63.2025	2.81957	8.91628	502.460	1.99582	4.29987	9.26380	.125786
7.96	63.3616	2.82135	8.92188	504.358	1.99666	4.30168	9.26768	.125628
7.97	63.5209	2.82312	8.92749	506.262	1.99750	4.30348	9.27156	.125471
7.98	63.6804	2.82489	8.93308	508.170	1.99833	4.30528	9.27544	.125313
7.99	63.8401	2.82666	8.93868	510.082	1.99917	4.30707	9.27931	.125156
8.00	64.0000	2.82843	8.94427	512.000	2.00000	4.30887	9.28318	.125000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
8.00	64.0000	2.82843	8.94127	512.000	2.00000	4.30887	9.28318	.125000
8.01	64.1601	2.83019	8.94986	513.922	2.00083	4.31066	9.28704	.124844
8.02	64.3204	2.83196	8.95545	515.850	2.00167	4.31242	9.29091	.124688
8.03	64.4809	2.83373	8.96103	517.782	2.00250	4.31425	9.29477	.124533
8.04	64.6416	2.83549	8.96660	519.718	2.00333	4.31604	9.29862	.124378
8.05	64.8025	2.83725	8.97218	521.660	2.00416	4.31783	9.30248	.124224
8.06	64.9636	2.83901	8.97775	523.607	2.00499	4.31961	9.30633	.124069
8.07	65.1249	2.84077	8.98332	525.558	2.00582	4.32140	9.31018	.123916
8.08	65.2864	2.84253	8.98888	527.514	2.00664	4.32318	9.31402	.123762
8.09	65.4481	2.84429	8.99444	529.475	2.00747	4.32497	9.31786	.123609
8.10	65.6100	2.84605	9.00000	531.441	2.00830	4.32675	9.32170	.123457
8.11	65.7721	2.84781	9.00555	533.412	2.00912	4.32853	9.32553	.123305
8.12	65.9344	2.84956	9.01110	535.387	2.00995	4.33031	9.32936	.123153
8.13	66.0969	2.85132	9.01665	537.368	2.01078	4.33208	9.33319	.123001
8.14	66.2596	2.85307	9.02219	539.353	2.01160	4.33386	9.33702	.122850
8.15	66.4225	2.85482	9.02774	541.343	2.01242	4.33563	9.34084	.122699
8.16	66.5856	2.85657	9.03327	543.338	2.01325	4.33741	9.34466	.122549
8.17	66.7489	2.85832	9.03881	545.339	2.01407	4.33918	9.34847	.122399
8.18	66.9124	2.86007	9.04434	547.343	2.01489	4.34095	9.35229	.122249
8.19	67.0761	2.86182	9.04986	549.353	2.01571	4.34271	9.35610	.122100
8.20	67.2400	2.86356	9.05539	551.368	2.01653	4.34448	9.35990	.121951
8.21	67.4041	2.86531	9.06091	553.388	2.01735	4.34625	9.36370	.121803
8.22	67.5684	2.86705	9.06642	555.412	2.01817	4.34801	9.36751	.121655
8.23	67.7329	2.86880	9.07193	557.442	2.01899	4.34977	9.37130	.121507
8.24	67.8976	2.87054	9.07744	559.476	2.01980	4.35153	9.37510	.121359
8.25	68.0625	2.87228	9.08295	561.516	2.02062	4.35329	9.37889	.121212
8.26	68.2276	2.87402	9.08845	563.560	2.02144	4.35505	9.38268	.121065
8.27	68.3929	2.87576	9.09395	565.609	2.02225	4.35681	9.38646	.120919
8.28	68.5584	2.87750	9.09945	567.664	2.02307	4.35856	9.39024	.120773
8.29	68.7241	2.87924	9.10494	569.723	2.02388	4.36032	9.39402	.120627
8.30	68.8900	2.88097	9.11043	571.787	2.02469	4.36207	9.39780	.120482
8.31	69.0561	2.88271	9.11592	573.856	2.02551	4.36382	9.40157	.120337
8.32	69.2224	2.88444	9.12140	575.930	2.02632	4.36557	9.40534	.120192
8.33	69.3889	2.88617	9.12688	578.010	2.02713	4.36732	9.40911	.120048
8.34	69.5556	2.88791	9.13236	580.094	2.02794	4.36907	9.41287	.119904
8.35	69.7225	2.88964	9.13783	582.183	2.02875	4.37081	9.41663	.119760
8.36	69.8896	2.89137	9.14330	584.277	2.02956	4.37256	9.42039	.119617
8.37	70.0569	2.89310	9.14877	586.376	2.03037	4.37430	9.42414	.119474
8.38	70.2244	2.89482	9.15423	588.480	2.03118	4.37604	9.42789	.119332
8.39	70.3921	2.89655	9.15969	590.590	2.03199	4.37778	9.43164	.119190
8.40	70.5600	2.89828	9.16515	592.704	2.03279	4.37952	9.43539	.119048
8.41	70.7281	2.90000	9.17061	594.823	2.03360	4.38126	9.43913	.118906
8.42	70.8964	2.90172	9.17606	596.948	2.03440	4.38299	9.44287	.118765
8.43	71.0649	2.90345	9.18150	599.077	2.03521	4.38473	9.44661	.118624
8.44	71.2336	2.90517	9.18695	601.212	2.03601	4.38646	9.45034	.118483
8.45	71.4025	2.90689	9.19239	603.351	2.03682	4.38819	9.45407	.118343
8.46	71.5716	2.90861	9.19783	605.496	2.03762	4.38992	9.45780	.118203
8.47	71.7409	2.91033	9.20326	607.645	2.03842	4.39165	9.46152	.118061
8.48	71.9104	2.91204	9.20869	609.800	2.03923	4.39338	9.46525	.117925
8.49	72.0801	2.91376	9.21412	611.960	2.04003	4.39510	9.46897	.117786
8.50	72.2500	2.91548	9.21954	614.125	2.04083	4.39683	9.47268	.117647
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
8.50	72.2500	2.91548	9.21954	614.125	2.04083	4.39683	9.47268	.117647
8.51	72.4201	2.91719	9.22497	616.295	2.04163	4.39855	9.47640	.117509
8.52	72.5904	2.91890	9.23038	618.470	2.04243	4.40028	9.48011	.117371
8.53	72.7609	2.92062	9.23580	620.650	2.04323	4.40200	9.48381	.117233
8.54	72.9316	2.92233	9.24121	622.836	2.04402	4.40372	9.48752	.117096
8.55	73.1025	2.92404	9.24662	625.026	2.04482	4.40543	9.49122	.116959
8.56	73.2736	2.92575	9.25203	627.222	2.04562	4.40715	9.49492	.116822
8.57	73.4449	2.92746	9.25743	629.423	2.04641	4.40887	9.49861	.116686
8.58	73.6164	2.92916	9.26283	631.629	2.04721	4.41058	9.50231	.116550
8.59	73.7881	2.93087	9.26823	633.840	2.04801	4.41229	9.50600	.116414
8.60	73.9600	2.93258	9.27362	636.056	2.04880	4.41400	9.50969	.116279
8.61	74.1321	2.93428	9.27901	638.277	2.04959	4.41571	9.51337	.116144
8.62	74.3044	2.93598	9.28440	640.504	2.05039	4.41742	9.51705	.116009
8.63	74.4769	2.93769	9.28978	642.736	2.05118	4.41913	9.52073	.115875
8.64	74.6496	2.93939	9.29516	644.973	2.05197	4.42084	9.52441	.115741
8.65	74.8225	2.94109	9.30054	647.215	2.05276	4.42254	9.52808	.115607
8.66	74.9956	2.94279	9.30591	649.462	2.05355	4.42425	9.53175	.115473
8.67	75.1689	2.94449	9.31128	651.714	2.05434	4.42595	9.53542	.115340
8.68	75.3424	2.94618	9.31665	653.972	2.05513	4.42765	9.53908	.115207
8.69	75.5161	2.94788	9.32202	656.235	2.05592	4.42935	9.54274	.115075
8.70	75.6900	2.94958	9.32738	658.503	2.05671	4.43105	9.54640	.114943
8.71	75.8641	2.95127	9.33274	660.776	2.05750	4.43274	9.55006	.114811
8.72	76.0384	2.95296	9.33809	663.055	2.05828	4.43444	9.55371	.114679
8.73	76.2129	2.95466	9.34345	665.339	2.05907	4.43613	9.55736	.114548
8.74	76.3876	2.95635	9.34880	667.628	2.05986	4.43783	9.56101	.114416
8.75	76.5625	2.95804	9.35414	669.922	2.06064	4.43952	9.56466	.114286
8.76	76.7376	2.95973	9.35949	672.221	2.06143	4.44121	9.56830	.114155
8.77	76.9129	2.96142	9.36483	674.526	2.06221	4.44290	9.57194	.114025
8.78	77.0884	2.96311	9.37017	676.836	2.06299	4.44459	9.57557	.113895
8.79	77.2641	2.96479	9.37550	679.151	2.06378	4.44627	9.57921	.113766
8.80	77.4400	2.96648	9.38083	681.472	2.06456	4.44796	9.58284	.113636
8.81	77.6161	2.96816	9.38616	683.798	2.06534	4.44964	9.58647	.113507
8.82	77.7924	2.96985	9.39149	686.129	2.06612	4.45133	9.59009	.113379
8.83	77.9689	2.97153	9.39681	688.465	2.06690	4.45301	9.59372	.113250
8.84	78.1456	2.97321	9.40213	690.807	2.06768	4.45469	9.59734	.113122
8.85	78.3225	2.97489	9.40744	693.154	2.06846	4.45637	9.60095	.112994
8.86	78.4996	2.97658	9.41276	695.506	2.06924	4.45805	9.60457	.112867
8.87	78.6769	2.97825	9.41807	697.864	2.07002	4.45972	9.60818	.112740
8.88	78.8544	2.97993	9.42338	700.227	2.07080	4.46140	9.61179	.112613
8.89	79.0321	2.98161	9.42868	702.595	2.07157	4.46307	9.61540	.112486
8.90	79.2100	2.98329	9.43398	704.969	2.07235	4.46475	9.61900	.112360
8.91	79.3881	2.98496	9.43928	707.348	2.07313	4.46642	9.62260	.112233
8.92	79.5664	2.98664	9.44458	709.732	2.07390	4.46809	9.62620	.112108
8.93	79.7449	2.98831	9.44987	712.122	2.07468	4.46976	9.62980	.111982
8.94	79.9236	2.98998	9.45516	714.517	2.07545	4.47142	9.63339	.111857
8.95	80.1025	2.99166	9.46044	716.917	2.07622	4.47309	9.63698	.111732
8.96	80.2816	2.99333	9.46573	719.323	2.07700	4.47476	9.64057	.111607
8.97	80.4609	2.99500	9.47101	721.734	2.07777	4.47642	9.64415	.111483
8.98	80.6404	2.99666	9.47629	724.151	2.07854	4.47808	9.64774	.111359
8.99	80.8201	2.99833	9.48156	726.573	2.07931	4.47974	9.65132	.111235
9.00	81.0000	3.00000	9.48683	729.000	2.08008	4.48140	9.65489	.111111
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
9.00	81.0000	3.00000	9.48683	729.000	2.08008	4.48140	9.63489	.111111
9.01	81.1801	3.00167	9.49210	731.433	2.08085	4.48306	9.63847	.110988
9.02	81.3604	3.00333	9.49737	733.871	2.08162	4.48472	9.66204	.110865
9.03	81.5409	3.00500	9.50263	736.314	2.08239	4.48638	9.66561	.110742
9.04	81.7216	3.00666	9.50789	738.763	2.08316	4.48803	9.66918	.110619
9.05	81.9025	3.00832	9.51315	741.218	2.08393	4.48969	9.67274	.110497
9.06	82.0836	3.00998	9.51840	743.677	2.08470	4.49134	9.67630	.110375
9.07	82.2649	3.01164	9.52365	746.143	2.08546	4.49299	9.67986	.110254
9.08	82.4464	3.01330	9.52890	748.613	2.08623	4.49464	9.68342	.110132
9.09	82.6281	3.01496	9.53415	751.089	2.08699	4.49629	9.68697	.110011
9.10	82.8100	3.01662	9.53939	753.571	2.08776	4.49794	9.69052	.109890
9.11	82.9921	3.01828	9.54463	756.058	2.08852	4.49959	9.69407	.109769
9.12	83.1744	3.01993	9.54987	758.551	2.08929	4.50123	9.69762	.109649
9.13	83.3569	3.02159	9.55510	761.048	2.09005	4.50288	9.70116	.109529
9.14	83.5396	3.02324	9.56033	763.552	2.09081	4.50452	9.70470	.109409
9.15	83.7225	3.02490	9.56556	766.061	2.09158	4.50616	9.70824	.109290
9.16	83.9056	3.02655	9.57079	768.575	2.09234	4.50781	9.71177	.109170
9.17	84.0889	3.02820	9.57604	771.095	2.09310	4.50945	9.71531	.109051
9.18	84.2724	3.02985	9.58123	773.621	2.09386	4.51108	9.71884	.108932
9.19	84.4561	3.03150	9.58645	776.152	2.09462	4.51272	9.72236	.108814
9.20	84.6400	3.03315	9.59166	778.688	2.09538	4.51436	9.72589	.108696
9.21	84.8241	3.03480	9.59687	781.230	2.09614	4.51599	9.72941	.108578
9.22	85.0084	3.03645	9.60208	783.777	2.09690	4.51763	9.73293	.108460
9.23	85.1929	3.03809	9.60729	786.330	2.09765	4.51926	9.73645	.108342
9.24	85.3776	3.03974	9.61249	788.889	2.09841	4.52089	9.73996	.108225
9.25	85.5625	3.04138	9.61769	791.453	2.09917	4.52252	9.74348	.108108
9.26	85.7476	3.04302	9.62289	794.023	2.09992	4.52415	9.74699	.107991
9.27	85.9329	3.04467	9.62808	796.598	2.10068	4.52578	9.75049	.107875
9.28	86.1184	3.04631	9.63328	799.179	2.10144	4.52740	9.75400	.107759
9.29	86.3041	3.04795	9.63846	801.765	2.10219	4.52903	9.75750	.107643
9.30	86.4900	3.04959	9.64365	804.357	2.10294	4.53065	9.76100	.107527
9.31	86.6761	3.05123	9.64883	806.954	2.10370	4.53228	9.76450	.107411
9.32	86.8624	3.05287	9.65401	809.558	2.10445	4.53390	9.76799	.107296
9.33	87.0489	3.05450	9.65919	812.166	2.10520	4.53552	9.77148	.107181
9.34	87.2356	3.05614	9.66437	814.781	2.10595	4.53714	9.77497	.107066
9.35	87.4225	3.05778	9.66954	817.400	2.10671	4.53876	9.77846	.106952
9.36	87.6096	3.05941	9.67471	820.026	2.10746	4.54038	9.78195	.106838
9.37	87.7969	3.06105	9.67988	822.657	2.10821	4.54199	9.78543	.106724
9.38	87.9844	3.06268	9.68504	825.294	2.10896	4.54361	9.78891	.106610
9.39	88.1721	3.06431	9.69020	827.936	2.10971	4.54522	9.79239	.106496
9.40	88.3600	3.06594	9.69536	830.584	2.11045	4.54684	9.79586	.106383
9.41	88.5481	3.06757	9.70052	833.238	2.11120	4.54845	9.79933	.106270
9.42	88.7364	3.06920	9.70567	835.897	2.11195	4.55006	9.80280	.106157
9.43	88.9249	3.07083	9.71082	838.562	2.11270	4.55167	9.80627	.106045
9.44	89.1136	3.07246	9.71597	841.232	2.11344	4.55328	9.80974	.105932
9.45	89.3025	3.07409	9.72111	843.909	2.11419	4.55488	9.81320	.105820
9.46	89.4916	3.07571	9.72625	846.591	2.11494	4.55649	9.81666	.105708
9.47	89.6809	3.07734	9.73139	849.278	2.11568	4.55809	9.82012	.105597
9.48	89.8704	3.07896	9.73653	851.971	2.11642	4.55970	9.82357	.105485
9.49	90.0601	3.08058	9.74166	854.670	2.11717	4.56130	9.82703	.105374
9.50	90.2500	3.08221	9.74679	857.375	2.11791	4.56290	9.83048	.105263
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$
9.50	90.2500	3.08221	9.74679	857.375	2.11791	4.56290	9.83048	.105263
9.51	90.4401	3.08383	9.75192	860.685	2.11865	4.56450	9.83202	.105152
9.52	90.6304	3.08545	9.75705	862.801	2.11940	4.56610	9.83373	.105042
9.53	90.8209	3.08707	9.76217	865.523	2.12014	4.56770	9.84081	.104932
9.54	91.0116	3.08869	9.76729	868.251	2.12088	4.56930	9.84425	.104822
9.55	91.2025	3.09031	9.77241	870.984	2.12162	4.57089	9.84769	.104712
9.56	91.3936	3.09192	9.77753	873.723	2.12236	4.57249	9.85113	.104603
9.57	91.5849	3.09354	9.78264	876.467	2.12310	4.57408	9.85456	.104493
9.58	91.7764	3.09516	9.78775	879.218	2.12384	4.57567	9.85799	.104384
9.59	91.9681	3.09677	9.79285	881.974	2.12458	4.57727	9.86142	.104275
9.60	92.1600	3.09839	9.79796	884.736	2.12532	4.57886	9.86485	.104167
9.61	92.3521	3.10000	9.80306	887.504	2.12605	4.58045	9.86827	.104058
9.62	92.5444	3.10161	9.80816	890.277	2.12679	4.58204	9.87169	.103950
9.63	92.7369	3.10322	9.81326	893.056	2.12753	4.58362	9.87511	.103842
9.64	92.9296	3.10483	9.81835	895.841	2.12826	4.58521	9.87853	.103734
9.65	93.1225	3.10644	9.82344	898.632	2.12900	4.58679	9.88195	.103627
9.66	93.3156	3.10805	9.82853	901.429	2.12974	4.58838	9.88536	.103520
9.67	93.5089	3.10966	9.83362	904.231	2.13047	4.58996	9.88877	.103413
9.68	93.7024	3.11127	9.83870	907.039	2.13120	4.59154	9.89217	.103306
9.69	93.8961	3.11288	9.84378	909.853	2.13194	4.59312	9.89558	.103199
9.70	94.0900	3.11448	9.84886	912.673	2.13267	4.59470	9.89898	.103093
9.71	94.2841	3.11609	9.85393	915.499	2.13340	4.59628	9.90238	.102987
9.72	94.4784	3.11769	9.85901	918.330	2.13414	4.59786	9.90578	.102881
9.73	94.6729	3.11929	9.86408	921.167	2.13487	4.59943	9.90918	.102775
9.74	94.8676	3.12090	9.86914	924.010	2.13560	4.60101	9.91257	.102669
9.75	95.0625	3.12250	9.87421	926.859	2.13633	4.60258	9.91596	.102564
9.76	95.2576	3.12410	9.87927	929.714	2.13706	4.60416	9.91935	.102459
9.77	95.4529	3.12570	9.88433	932.575	2.13779	4.60573	9.92274	.102354
9.78	95.6484	3.12730	9.88939	935.441	2.13852	4.60730	9.92612	.102249
9.79	95.8441	3.12890	9.89444	938.314	2.13925	4.60887	9.92950	.102145
9.80	96.0400	3.13050	9.89949	941.192	2.13997	4.61044	9.93288	.102041
9.81	96.2361	3.13209	9.90454	944.076	2.14070	4.61200	9.93626	.101937
9.82	96.4324	3.13369	9.90959	946.966	2.14143	4.61357	9.93964	.101833
9.83	96.6289	3.13528	9.91464	949.862	2.14216	4.61514	9.94301	.101729
9.84	96.8256	3.13688	9.91968	952.764	2.14288	4.61670	9.94638	.101626
9.85	97.0225	3.13847	9.92472	955.672	2.14361	4.61826	9.94975	.101523
9.86	97.2196	3.14006	9.92975	958.585	2.14433	4.61983	9.95311	.101420
9.87	97.4169	3.14166	9.93479	961.505	2.14506	4.62139	9.95648	.101317
9.88	97.6144	3.14325	9.93982	964.430	2.14578	4.62295	9.95984	.101215
9.89	97.8121	3.14484	9.94485	967.362	2.14651	4.62451	9.96320	.101112
9.90	98.0100	3.14643	9.94987	970.299	2.14723	4.62607	9.96655	.101010
9.91	98.2081	3.14802	9.95490	973.242	2.14795	4.62762	9.96991	.100908
9.92	98.4064	3.14960	9.95992	976.191	2.14867	4.62918	9.97326	.100806
9.93	98.6049	3.15119	9.96494	979.147	2.14940	4.63073	9.97661	.100705
9.94	98.8036	3.15278	9.96995	982.108	2.15012	4.63229	9.97996	.100604
9.95	99.0025	3.15436	9.97497	985.075	2.15084	4.63384	9.98331	.100503
9.96	99.2016	3.15595	9.97998	988.048	2.15156	4.63539	9.98666	.100402
9.97	99.4009	3.15753	9.98499	991.027	2.15228	4.63694	9.98999	.100301
9.98	99.6004	3.15911	9.98999	994.012	2.15300	4.63849	9.99333	.100200
9.99	99.8001	3.16070	9.99500	997.003	2.15372	4.64004	9.99667	.100100
10.00	100.000	3.16228	10.0000	1000.00	2.15443	4.64159	10.0000	.100000
n	n^2	$\sqrt{n}$	$\sqrt{10n}$	n^3	$\sqrt[3]{n}$	$\sqrt[3]{10n}$	$\sqrt[3]{100n}$	$1/n$

N	0	1	2	3	4	5	6	7	8	9
0.0		5.395	6.088	6.493	6.781	7.004	7.187	7.341	7.474	7.592
0.1	Take tabular value — 10	7.697	7.793	7.880	7.960	8.034	8.103	8.167	8.228	8.285
0.2		8.391	8.439	8.486	8.530	8.573	8.614	8.653	8.691	8.727
0.3		8.796	8.829	8.861	8.891	8.921	8.950	8.978	9.006	9.032
0.4		9.084	9.108	9.132	9.156	9.179	9.201	9.223	9.245	9.266
0.5		9.307	9.327	9.346	9.365	9.384	9.402	9.420	9.438	9.455
0.6		9.489	9.506	9.522	9.538	9.554	9.569	9.584	9.600	9.614
0.7		9.643	9.658	9.671	9.685	9.699	9.712	9.726	9.739	9.752
0.8		9.777	9.789	9.802	9.814	9.826	9.837	9.849	9.861	9.872
0.9		9.895	9.906	9.917	9.927	9.938	9.949	9.959	9.970	9.980
1.0	0.00000	0995	1980	2956	3922	4879	5827	6766	7696	8618
1.1	9531	*0436	*1333	*2222	*3103	*3976	*4842	*5700	*6551	*7395
1.2	0.1 8232	9062	9885	*0701	*1511	*2314	*3111	*3902	*4686	*5464
1.3	0.2 6236	7003	7763	8518	9267	*0010	*0748	*1481	*2208	*2930
1.4	0.3 3647	4359	5066	5767	6464	7156	7844	8526	9204	9878
1.5	0.4 0547	1211	1871	2527	3178	3825	4469	5108	5742	6373
1.6	7000	7623	8243	8858	9470	*0078	*0682	*1282	*1879	*2473
1.7	0.5 3063	3649	4232	4812	5389	5962	6531	7098	7661	8222
1.8	8779	9333	9884	*0432	*0977	*1519	*2058	*2594	*3127	*3658
1.9	0.6 4185	4710	5233	5752	6269	6783	7294	7803	8310	8813
2.0	9315	9813	*0310	*0804	*1295	*1784	*2271	*2755	*3237	*3716
2.1	0.7 4194	4669	5142	5612	6081	6547	7011	7473	7932	8390
2.2	8846	9299	9751	*0200	*0648	*1093	*1536	*1978	*2418	*2855
2.3	0.8 3291	3725	4157	4587	5015	5442	5866	6289	6710	7129
2.4	7547	7963	8377	8789	9200	9609	*0016	*0422	*0826	*1228
2.5	0.9 1629	2028	2426	2822	3216	3609	4001	4391	4779	5166
2.6	5551	5935	6317	6698	7078	7456	7833	8208	8582	8954
2.7	9325	9695	*0063	*0430	*0796	*1160	*1523	*1885	*2245	*2604
2.8	1.0 2962	3318	3674	4028	4380	4732	5082	5431	5779	6126
2.9	6471	6815	7158	7500	7841	8181	8519	8856	9192	9527
3.0	9861	*0191	*0526	*0856	*1186	*1514	*1841	*2168	*2493	*2817
3.1	1.1 3140	3462	3783	4103	4422	4740	5057	5373	5688	6002
3.2	6315	6627	6938	7248	7557	7865	8173	8479	8784	9089
3.3	9392	9695	9996	*0297	*0597	*0896	*1194	*1491	*1788	*2083
3.4	1.2 2378	2671	2964	3256	3547	3837	4127	4415	4703	4990
3.5	5276	5562	5846	6130	6413	6695	6976	7257	7536	7815
3.6	8093	8371	8647	8923	9198	9473	9746	*0019	*0291	*0563
3.7	1.3 0833	1103	1372	1641	1909	2176	2442	2708	2972	3237
3.8	3500	3763	4025	4286	4547	4807	5067	5325	5584	5841
3.9	6098	6354	6609	6864	7118	7372	7624	7877	8128	8379
4.0	8629	8879	9128	9377	9624	9872	*0118	*0364	*0610	*0854
4.1	1.4 1099	1342	1585	1828	2070	2311	2552	2792	3031	3270
4.2	3508	3746	3984	4220	4456	4692	4927	5161	5395	5629
4.3	5862	6094	6326	6557	6787	7018	7247	7476	7705	7933
4.4	8160	8387	8614	8840	9065	9290	9515	9739	9962	*0185
4.5	1.5 0408	0630	0851	1072	1293	1513	1732	1951	2170	2388
4.6	2606	2823	3039	3256	3471	3687	3902	4116	4330	4543
4.7	4756	4969	5181	5393	5604	5814	6025	6235	6444	6653
4.8	6862	7070	7277	7485	7691	7898	8104	8309	8515	8719
4.9	8924	9127	9331	9534	9737	9939	*0141	*0342	*0543	*0744
5.0	1.6 0944	1144	1343	1542	1741	1939	2137	2334	2531	2728
N	0	1	2	3	4	5	6	7	8	9

N	0	1	2	3	4	5	6	7	8	9
5.0	1.6 0944	1144	1343	1542	1741	1939	2137	2334	2531	2728
5.1	2924	3120	3315	3511	3705	3900	4094	4287	4481	4673
5.2	4866	5058	5250	5441	5632	5823	6013	6203	6393	6582
5.3	6771	6959	7147	7335	7523	7710	7896	8083	8269	8455
5.4	8640	8825	9010	9194	9378	9562	9745	9928	*0111	*0293
5.5	1.7 0475	0656	0838	1019	1199	1380	1560	1740	1919	2098
5.6	2277	2455	2633	2811	2988	3166	3342	3519	3695	3871
5.7	4047	4222	4397	4572	4746	4920	5094	5267	5440	5613
5.8	5786	5958	6130	6302	6473	6644	6815	6985	7156	7326
5.9	7495	7665	7834	8002	8171	8339	8507	8675	8842	9009
6.0	9176	9342	9509	9675	9840	*0006	*0171	*0336	*0500	*0665
6.1	1.8 0829	0993	1156	1319	1482	1645	1808	1970	2132	2294
6.2	2455	2616	2777	2938	3098	3258	3418	3578	3737	3896
6.3	4055	4214	4372	4530	4688	4845	5003	5160	5317	5473
6.4	5630	5786	5942	6097	6253	6408	6563	6718	6872	7026
6.5	7180	7334	7487	7641	7794	7947	8099	8251	8403	8555
6.6	8707	8858	9010	9160	9311	9462	9612	9762	9912	*0061
6.7	1.9 0211	0360	0509	0658	0806	0954	1102	1250	1398	1545
6.8	1692	1839	1986	2132	2279	2425	2571	2716	2862	3007
6.9	3152	3297	3442	3586	3730	3874	4018	4162	4305	4448
7.0	4591	4734	4876	5019	5161	5303	5445	5586	5727	5869
7.1	6009	6150	6291	6431	6571	6711	6851	6991	7130	7269
7.2	7408	7547	7685	7824	7962	8100	8238	8376	8513	8650
7.3	8787	8924	9061	9198	9334	9470	9606	9742	9877	*0013
7.4	2.0 0148	0283	0418	0553	0687	0821	0956	1089	1223	1357
7.5	1490	1624	1757	1890	2022	2155	2287	2419	2551	2683
7.6	2815	2946	3078	3209	3340	3471	3601	3732	3862	3992
7.7	4122	4252	4381	4511	4640	4769	4898	5027	5156	5284
7.8	5412	5540	5668	5796	5924	6051	6179	6306	6433	6560
7.9	6686	6813	6939	7065	7191	7317	7443	7568	7694	7819
8.0	7944	8069	8194	8318	8443	8567	8691	8815	8939	9063
8.1	9186	9310	9433	9556	9679	9802	9924	*0047	*0169	*0291
8.2	2.1 0413	0535	0657	0779	0900	1021	1142	1263	1384	1505
8.3	1626	1746	1866	1986	2106	2226	2346	2465	2585	2704
8.4	2823	2942	3061	3180	3298	3417	3535	3653	3771	3889
8.5	4007	4124	4242	4359	4476	4593	4710	4827	4943	5060
8.6	5176	5292	5409	5524	5640	5756	5871	5987	6102	6217
8.7	6332	6447	6562	6677	6791	6905	7020	7134	7248	7361
8.8	7475	7589	7702	7816	7929	8042	8155	8267	8380	8493
8.9	8605	8717	8830	8942	9054	9165	9277	9389	9500	9611
9.0	9722	9834	9944	*0055	*0166	*0276	*0387	*0497	*0607	*0717
9.1	2.2 0827	0937	1047	1157	1266	1375	1485	1594	1703	1812
9.2	1920	2029	2138	2246	2354	2462	2570	2678	2786	2894
9.3	3001	3109	3216	3324	3431	3538	3645	3751	3858	3965
9.4	4071	4177	4284	4390	4496	4601	4707	4813	4918	5024
9.5	5129	5234	5339	5444	5549	5654	5759	5863	5968	6072
9.6	6176	6280	6384	6488	6592	6696	6799	6903	7006	7109
9.7	7213	7316	7419	7521	7624	7727	7829	7932	8034	8136
9.8	8238	8340	8442	8544	8646	8747	8849	8950	9051	9152
9.9	9253	9354	9455	9556	9657	9757	9858	9958	*0058	*0158
10.0	2.3 0259	0358	0458	0558	0658	0757	0857	0956	1055	1154
N	0	1	2	3	4	5	6	7	8	9

10	2.30259	25	3.21888	40	3.68888	55	4.00733	70	4.24850	85	4.44265
11	2.39790	26	3.25810	41	3.71357	56	4.02535	71	4.26268	86	4.45435
12	2.48491	27	3.29584	42	3.73767	57	4.04305	72	4.27667	87	4.46591
13	2.56495	28	3.33220	43	3.76120	58	4.06044	73	4.29046	88	4.47734
14	2.63906	29	3.36730	44	3.78419	59	4.07754	74	4.30107	89	4.48864
15	2.70805	30	3.40120	45	3.80666	60	4.09434	75	4.31749	90	4.49981
16	2.77259	31	3.43399	46	3.82864	61	4.11087	76	4.33073	91	4.51086
17	2.83321	32	3.46574	47	3.85015	62	4.12713	77	4.34381	92	4.52179
18	2.89037	33	3.49651	48	3.87120	63	4.14313	78	4.35671	93	4.53260
19	2.94444	34	3.52636	49	3.89182	64	4.15888	79	4.36945	94	4.54329
20	2.99573	35	3.55535	50	3.91202	65	4.17439	80	4.38203	95	4.55388
21	3.04452	36	3.58352	51	3.93183	66	4.18965	81	4.39445	96	4.56435
22	3.09104	37	3.61092	52	3.95124	67	4.20469	82	4.40672	97	4.57471
23	3.13549	38	3.63759	53	3.97029	68	4.21951	83	4.41884	98	4.58497
24	3.17805	39	3.66356	54	3.98898	69	4.23411	84	4.43082	99	4.59512

NAPIERIAN OR NATURAL LOGARITHMS—100 TO 409

N	0	1	2	3	4	5	6	7	8	9
10	4.6 0517	1512	2497	3473	4439	5396	6344	7283	8213	9135
11	4.7 0048	0953	1850	2739	3620	4493	5359	6217	7068	7912
12	8749	9579	*0402	*1218	*2028	*2831	*3628	*4419	*5203	*5981
13	4.8 6753	7520	8280	9035	9784	*0527	*1265	*1998	*2725	*3447
14	4.9 4164	4876	5583	6284	6981	7673	8361	9043	9721	*0395
15	5.0 1064	1728	2388	3044	3695	4343	4986	5625	6260	6890
16	7517	8140	8760	9375	9987	*0595	*1199	*1799	*2396	*2990
17	5.1 3580	4166	4749	5329	5906	6479	7048	7615	8178	8739
18	9296	9850	*0401	*0949	*1494	*2036	*2575	*3111	*3644	*4175
19	5.2 4702	5227	5750	6269	6786	7300	7811	8320	8827	9330
20	9832	*0330	*0827	*1321	*1812	*2301	*2788	*3272	*3754	*4233
21	5.3 4711	5186	5659	6129	6598	7064	7528	7990	8450	8907
22	9363	9816	*0268	*0717	*1165	*1610	*2053	*2495	*2935	*3372
23	5.4 3808	4242	4674	5104	5532	5959	6383	6806	7227	7646
24	8064	8480	8894	9306	9717	*0126	*0533	*0939	*1343	*1745
25	5.5 2146	2545	2943	3339	3733	4126	4518	4908	5296	5683
26	6068	6452	6834	7215	7595	7973	8350	8725	9099	9471
27	9842	*0212	*0580	*0947	*1313	*1677	*2040	*2402	*2762	*3121
28	5.6 3479	3835	4191	4545	4897	5249	5599	5948	6296	6643
29	6988	7332	7675	8017	8358	8698	9036	9373	9709	*0014
30	5.7 0378	0711	1043	1373	1703	2031	2359	2685	3010	3334
31	3657	3979	4300	4620	4939	5257	5574	5890	6205	6519
32	6832	7144	7455	7765	8074	8383	8690	8996	9301	9606
33	9909	*0212	*0513	*0814	*1114	*1413	*1711	*2008	*2305	*2600
34	5.8 2895	3188	3481	3773	4064	4354	4644	4932	5220	5507
35	5793	6079	6363	6647	6930	7212	7493	7774	8053	8332
36	8610	8888	9164	9440	9715	9990	*0263	*0536	*0808	*1080
37	5.9 1350	1620	1889	2158	2426	2693	2959	3225	3489	3754
38	4017	4280	4542	4803	5064	5324	5584	5842	6101	6358
39	6615	6871	7126	7381	7635	7889	8141	8394	8645	8896
40	9146	9396	9645	9894	*0141	*0389	*0635	*0881	*1127	*1372
N	0	1	2	3	4	5	6	7	8	9

Above 409, use the formula $\log_e 10 n = \log_e n + \log_e 10 = \log_e n + 2.30258509$,

or the formula

$$\log_e n = \log_e 10 \cdot \log_{10} n = 2.30258509 \log_{10} n.$$

<i>N</i>	<i>N</i> · <i>M</i>	<i>N</i>	<i>N</i> · <i>M</i>
0	0.00000 000	50	21.71472 410
1	0.43429 448	51	22.14901 858
2	0.86858 896	52	22.58331 306
3	1.30288 345	53	23.01760 754
4	1.73717 793	54	23.45190 202
5	2.17147 241	55	23.88619 650
6	2.60576 689	56	24.32049 099
7	3.04006 137	57	24.75478 547
8	3.47435 586	58	25.18907 995
9	3.90865 034	59	25.62337 443
10	4.34294 482	60	26.05766 891
11	4.77723 930	61	26.49196 340
12	5.21153 378	62	26.92625 788
13	5.64582 826	63	27.36055 236
14	6.08012 275	64	27.79484 684
15	6.51441 723	65	28.22914 132
16	6.94871 171	66	28.66343 581
17	7.38300 619	67	29.09773 029
18	7.81730 067	68	29.53202 477
19	8.25159 516	69	29.96631 925
20	8.68588 964	70	30.40061 373
21	9.12018 412	71	30.83490 822
22	9.55447 860	72	31.26920 270
23	9.98877 308	73	31.70349 718
24	10.42306 757	74	32.13779 166
25	10.85736 205	75	32.57208 614
26	11.29165 653	76	33.00638 062
27	11.72595 101	77	33.44067 511
28	12.16024 549	78	33.87496 959
29	12.59453 998	79	34.30926 407
30	13.02883 446	80	34.74355 855
31	13.46312 894	81	35.17785 303
32	13.89742 342	82	35.61214 752
33	14.33171 790	83	36.04644 200
34	14.76601 238	84	36.48073 648
35	15.20030 687	85	36.91503 096
36	15.63460 135	86	37.34932 544
37	16.06889 583	87	37.78361 993
38	16.50319 031	88	38.21791 441
39	16.93748 479	89	38.65220 889
40	17.37177 928	90	39.08650 337
41	17.80607 376	91	39.52079 785
42	18.24036 824	92	39.95509 234
43	18.67466 272	93	40.38938 682
44	19.10895 720	94	40.82368 130
45	19.54325 169	95	41.25797 578
46	19.97754 617	96	41.69227 026
47	20.41184 065	97	42.12656 474
48	20.84613 513	98	42.56085 923
49	21.28042 961	99	42.99515 371
50	21.71472 410	100	43.42944 819

<i>N</i>	<i>N</i> ÷ <i>M</i>	<i>N</i>	<i>N</i> ÷ <i>M</i>
0	0.00000 000	50	115.12925 465
1	2.30258 509	51	117.43183 974
2	4.60517 019	52	119.73442 484
3	6.90775 528	53	122.03700 993
4	9.21034 037	54	124.33959 502
5	11.51292 546	55	126.64218 011
6	13.81551 056	56	128.94476 521
7	16.11809 565	57	131.24735 030
8	18.42068 074	58	133.54993 539
9	20.72326 584	59	135.85252 049
10	23.02585 093	60	138.15510 558
11	25.32843 602	61	140.45769 067
12	27.63102 112	62	142.76027 577
13	29.93360 621	63	145.06286 086
14	32.23619 130	64	147.36544 595
15	34.53877 639	65	149.66803 104
16	36.84136 149	66	151.97061 614
17	39.14394 658	67	154.27320 123
18	41.44653 167	68	156.57578 632
19	43.74911 677	69	158.87837 142
20	46.05170 186	70	161.18095 651
21	48.35428 695	71	163.48354 160
22	50.65687 205	72	165.78612 670
23	52.95945 714	73	168.08871 179
24	55.26204 223	74	170.39129 688
25	57.56462 732	75	172.69388 197
26	59.86721 242	76	174.99646 707
27	62.16979 751	77	177.29905 216
28	64.47238 260	78	179.60163 725
29	66.77496 770	79	181.90422 235
30	69.07755 279	80	184.20680 744
31	71.38013 788	81	186.50939 253
32	73.68272 298	82	188.81197 763
33	75.98530 807	83	191.11456 272
34	78.28789 316	84	193.41714 781
35	80.59047 825	85	195.71973 290
36	82.89306 335	86	198.02231 800
37	85.19564 844	87	200.32490 309
38	87.49823 353	88	202.62748 818
39	89.80081 863	89	204.93007 328
40	92.10340 372	90	207.23265 837
41	94.40598 881	91	209.53524 346
42	96.70857 391	92	211.83782 856
43	99.01115 900	93	214.14041 365
44	101.31374 409	94	216.44299 874
45	103.61632 918	95	218.74558 383
46	105.91891 428	96	221.04816 893
47	108.22149 937	97	223.35075 402
48	110.52408 446	98	225.65333 911
49	112.82666 956	99	227.95592 421
50	115.12925 465	100	230.25850 930

$$M = \log_{10} e = .43429\ 44819\ 03251\ 82765$$

$$\log_{10} n = \log_e n \cdot \log_{10} e = M \log_e n$$

$$\log_{10} e^x = x \cdot \log_{10} e = x \cdot M.$$

$$\frac{1}{M} = \log_e 10 = 2.30258\ 50929\ 94015\ 68402$$

$$\log_e n = \log_{10} n \cdot \log_e 10 = \frac{1}{M} \log_{10} n.$$

$$\log_e (10^n \cdot x) = \log_e x + n \frac{1}{M}$$

x	e^x		e^{-x}	$\sinh x$		$\cosh x$		$\tanh x$
	Value	Log_{10}	Value	Value	Log_{10}	Value	Log_{10}	Value
0.00	1.0000	.00000	1.0000	0.0000	$-\infty$	1.0000	.00000	.00000
0.01	1.0101	.00434	.99005	0.0100	.00001	1.0001	.00002	.01000
0.02	1.0202	.00869	.98020	0.0200	.30106	1.0002	.00009	.02000
0.03	1.0305	.01303	.97045	0.0300	.47719	1.0005	.00020	.02999
0.04	1.0408	.01737	.96079	0.0400	.60218	1.0008	.00035	.03998
0.05	1.0513	.02171	.95123	0.0500	.69915	1.0013	.00054	.04996
0.06	1.0618	.02606	.94176	0.0600	.77841	1.0018	.00078	.05993
0.07	1.0725	.03040	.93239	0.0701	.84545	1.0025	.00106	.06989
0.08	1.0833	.03474	.92312	0.0801	.90355	1.0032	.00139	.07983
0.09	1.0942	.03909	.91393	0.0901	.95483	1.0041	.00176	.08976
0.10	1.1052	.04343	.90484	0.1002	.00072	1.0050	.00217	.09967
0.11	1.1163	.04777	.89583	0.1102	.04227	1.0061	.00262	.10956
0.12	1.1275	.05212	.88692	0.1203	.08022	1.0072	.00312	.11943
0.13	1.1388	.05646	.87809	0.1304	.11517	1.0085	.00366	.12927
0.14	1.1503	.06080	.86936	0.1405	.14755	1.0098	.00424	.13909
0.15	1.1618	.06514	.86071	0.1506	.17772	1.0113	.00487	.14889
0.16	1.1735	.06949	.85214	0.1607	.20597	1.0128	.00554	.15865
0.17	1.1853	.07383	.84366	0.1708	.23254	1.0145	.00625	.16838
0.18	1.1972	.07817	.83527	0.1810	.25762	1.0162	.00700	.17808
0.19	1.2092	.08252	.82696	0.1911	.28136	1.0181	.00779	.18775
0.20	1.2214	.08686	.81873	0.2013	.30392	1.0201	.00863	.19738
0.21	1.2337	.09120	.81058	0.2115	.32541	1.0221	.00951	.20697
0.22	1.2461	.09554	.80252	0.2218	.34592	1.0243	.01043	.21652
0.23	1.2586	.09989	.79453	0.2320	.36555	1.0266	.01139	.22603
0.24	1.2712	.10423	.78663	0.2423	.38437	1.0289	.01239	.23550
0.25	1.2840	.10857	.77880	0.2526	.40245	1.0314	.01343	.24492
0.26	1.2969	.11292	.77105	0.2629	.41986	1.0340	.01452	.25430
0.27	1.3100	.11726	.76338	0.2733	.43663	1.0367	.01564	.26362
0.28	1.3231	.12160	.75578	0.2837	.45282	1.0395	.01681	.27291
0.29	1.3364	.12595	.74826	0.2941	.46847	1.0423	.01801	.28213
0.30	1.3499	.13029	.74082	0.3045	.48362	1.0453	.01926	.29131
0.31	1.3634	.13463	.73345	0.3150	.49830	1.0484	.02054	.30044
0.32	1.3771	.13897	.72615	0.3255	.51254	1.0516	.02107	.30951
0.33	1.3910	.14332	.71892	0.3360	.52637	1.0549	.02323	.31852
0.34	1.4049	.14766	.71177	0.3466	.53981	1.0584	.02463	.32748
0.35	1.4191	.15200	.70469	0.3572	.55290	1.0619	.02607	.33638
0.36	1.4333	.15635	.69768	0.3678	.56564	1.0655	.02755	.34521
0.37	1.4477	.16069	.69073	0.3785	.57807	1.0692	.02907	.35399
0.38	1.4623	.16503	.68386	0.3892	.59019	1.0731	.03063	.36271
0.39	1.4770	.16937	.67706	0.4000	.60202	1.0770	.03222	.37136
0.40	1.4918	.17372	.67032	0.4108	.61358	1.0811	.03385	.37995
0.41	1.5068	.17806	.66365	0.4216	.62488	1.0852	.03552	.38847
0.42	1.5220	.18240	.65705	0.4325	.63594	1.0895	.03723	.39693
0.43	1.5373	.18675	.65051	0.4434	.64677	1.0939	.03897	.40532
0.44	1.5527	.19109	.64404	0.4543	.65738	1.0984	.04075	.41364
0.45	1.5683	.19543	.63763	0.4653	.66777	1.1030	.04256	.42190
0.46	1.5841	.19978	.63128	0.4764	.67797	1.1077	.04441	.43008
0.47	1.6000	.20412	.62500	0.4875	.68797	1.1125	.04630	.43820
0.48	1.6161	.20846	.61878	0.4986	.69779	1.1174	.04822	.44624
0.49	1.6323	.21280	.61263	0.5098	.70744	1.1225	.05018	.45422
0.50	1.6487	.21715	.60653	0.5211	.71692	1.1276	.05217	.46212

x	e^x		e^{-x}	$\text{Sinh } x$		$\text{Cosh } x$		$\text{Tanh } x$
	Value	Log_{10}	Value	Value	Log_{10}	Value	Log_{10}	Value
0.50	1.6487	.21715	.60653	0.5211	.71692	1.1276	.05217	.46212
0.51	1.6653	.22149	.60050	0.5324	.72624	1.1329	.05419	.46995
0.52	1.6820	.22583	.59452	0.5438	.73540	1.1383	.05625	.47770
0.53	1.6989	.23018	.58860	0.5552	.74442	1.1438	.05834	.48538
0.54	1.7160	.23452	.58275	0.5666	.75330	1.1494	.06046	.49299
0.55	1.7333	.23886	.57695	0.5782	.76204	1.1551	.06262	.50052
0.56	1.7507	.24320	.57121	0.5897	.77065	1.1609	.06481	.50798
0.57	1.7683	.24755	.56553	0.6014	.77914	1.1669	.06703	.51536
0.58	1.7860	.25189	.55990	0.6131	.78751	1.1730	.06929	.52267
0.59	1.8040	.25623	.55433	0.6248	.79576	1.1792	.07157	.52990
0.60	1.8221	.26058	.54881	0.6367	.80390	1.1855	.07389	.53705
0.61	1.8404	.26492	.54335	0.6485	.81194	1.1919	.07624	.54413
0.62	1.8589	.26926	.53794	0.6605	.81987	1.1984	.07861	.55113
0.63	1.8776	.27361	.53259	0.6725	.82770	1.2051	.08102	.55805
0.64	1.8965	.27795	.52729	0.6846	.83543	1.2119	.08346	.56490
0.65	1.9155	.28229	.52205	0.6967	.84308	1.2188	.08593	.57167
0.66	1.9348	.28664	.51685	0.7090	.85063	1.2258	.08843	.57836
0.67	1.9542	.29098	.51171	0.7213	.85809	1.2330	.09095	.58498
0.68	1.9739	.29532	.50662	0.7336	.86548	1.2402	.09351	.59152
0.69	1.9937	.29966	.50158	0.7461	.87278	1.2476	.09600	.59798
0.70	2.0138	.30401	.49659	0.7586	.88000	1.2552	.09870	.60437
0.71	2.0340	.30835	.49164	0.7712	.88715	1.2628	.10134	.61068
0.72	2.0544	.31269	.48675	0.7838	.89423	1.2706	.10401	.61691
0.73	2.0751	.31703	.48191	0.7966	.90123	1.2785	.10670	.62307
0.74	2.0959	.32138	.47711	0.8094	.90817	1.2865	.10942	.62915
0.75	2.1170	.32572	.47237	0.8223	.91504	1.2947	.11216	.63515
0.76	2.1383	.33006	.46767	0.8353	.92185	1.3030	.11493	.64108
0.77	2.1598	.33441	.46301	0.8484	.92859	1.3114	.11773	.64693
0.78	2.1815	.33875	.45841	0.8615	.93527	1.3199	.12055	.65271
0.79	2.2034	.34309	.45384	0.8748	.94190	1.3286	.12340	.65841
0.80	2.2255	.34744	.44933	0.8881	.94846	1.3374	.12627	.66404
0.81	2.2479	.35178	.44486	0.9015	.95498	1.3464	.12917	.66959
0.82	2.2705	.35612	.44043	0.9150	.96144	1.3555	.13209	.67507
0.83	2.2933	.36046	.43605	0.9286	.96784	1.3647	.13503	.68048
0.84	2.3164	.36481	.43171	0.9423	.97420	1.3740	.13800	.68581
0.85	2.3396	.36915	.42741	0.9561	.98051	1.3835	.14099	.69107
0.86	2.3632	.37349	.42316	0.9700	.98677	1.3932	.14400	.69626
0.87	2.3869	.37784	.41895	0.9840	.99299	1.4029	.14704	.70137
0.88	2.4109	.38218	.41478	0.9981	.99916	1.4128	.15009	.70642
0.89	2.4351	.38652	.41066	1.0122	.00528	1.4229	.15317	.71139
0.90	2.4596	.39087	.40657	1.0265	.01137	1.4331	.15627	.71630
0.91	2.4843	.39521	.40252	1.0409	.01741	1.4434	.15939	.72113
0.92	2.5093	.39955	.39852	1.0554	.02341	1.4539	.16254	.72590
0.93	2.5345	.40389	.39455	1.0700	.02937	1.4645	.16570	.73059
0.94	2.5600	.40824	.39063	1.0847	.03530	1.4753	.16888	.73522
0.95	2.5857	.41258	.38674	1.0995	.04119	1.4862	.17208	.73978
0.96	2.6117	.41692	.38289	1.1144	.04704	1.4973	.17531	.74428
0.97	2.6379	.42127	.37908	1.1294	.05286	1.5085	.17855	.74870
0.98	2.6645	.42561	.37531	1.1446	.05864	1.5199	.18181	.75307
0.99	2.6912	.42995	.37158	1.1598	.06439	1.5314	.18509	.75736
1.00	2.7183	.43429	.36788	1.1752	.07011	1.5431	.18839	.76159

x	e^x		e^{-x}	$\text{Sinh } x$		$\text{Cosh } x$		$\text{Tanh } x$
	Value	Log_{10}	Value	Value	Log_{10}	Value	Log_{10}	Value
1.00	2.7183	.43429	.36788	1.1752	.07011	1.5431	.18889	.76159
1.01	2.7456	.43864	.36422	1.1907	.07580	1.5549	.19171	.76576
1.02	2.7732	.44298	.36060	1.2063	.08146	1.5669	.19504	.76987
1.03	2.8011	.44732	.35701	1.2220	.08708	1.5790	.19839	.77391
1.04	2.8292	.45167	.35345	1.2379	.09268	1.5913	.20176	.77789
1.05	2.8577	.45601	.34994	1.2539	.09825	1.6038	.20515	.78181
1.06	2.8864	.46035	.34646	1.2700	.10379	1.6164	.20855	.78566
1.07	2.9154	.46470	.34301	1.2862	.10930	1.6292	.21197	.78946
1.08	2.9447	.46904	.33950	1.3025	.11479	1.6421	.21541	.79320
1.09	2.9743	.47338	.33622	1.3190	.12025	1.6552	.21886	.79688
1.10	3.0042	.47772	.33287	1.3356	.12569	1.6685	.22233	.80050
1.11	3.0344	.48207	.32956	1.3524	.13111	1.6820	.22582	.80406
1.12	3.0649	.48641	.32628	1.3693	.13649	1.6956	.22931	.80757
1.13	3.0957	.49075	.32303	1.3863	.14186	1.7093	.23283	.81102
1.14	3.1266	.49510	.31982	1.4035	.14720	1.7233	.23636	.81441
1.15	3.1582	.49944	.31664	1.4208	.15253	1.7374	.23990	.81775
1.16	3.1899	.50378	.31349	1.4382	.15783	1.7517	.24346	.82104
1.17	3.2220	.50812	.31037	1.4558	.16311	1.7662	.24703	.82427
1.18	3.2544	.51247	.30728	1.4735	.16836	1.7808	.25062	.82745
1.19	3.2871	.51681	.30422	1.4914	.17360	1.7957	.25422	.83058
1.20	3.3201	.52115	.30119	1.5085	.17882	1.8107	.25784	.83365
1.21	3.3535	.52550	.29820	1.5276	.18402	1.8258	.26146	.83668
1.22	3.3872	.52984	.29523	1.5460	.18920	1.8412	.26510	.83965
1.23	3.4212	.53418	.29229	1.5645	.19437	1.8568	.26876	.84258
1.24	3.4556	.53853	.28938	1.5831	.19951	1.8725	.27242	.84546
1.25	3.4903	.54287	.28650	1.6019	.20461	1.8884	.27610	.84828
1.26	3.5254	.54721	.28365	1.6209	.20975	1.9045	.27979	.85106
1.27	3.5609	.55155	.28083	1.6400	.21485	1.9208	.28349	.85380
1.28	3.5966	.55590	.27804	1.6593	.21993	1.9373	.28721	.85648
1.29	3.6328	.56024	.27527	1.6788	.22499	1.9540	.29093	.85913
1.30	3.6693	.56458	.27253	1.6984	.23004	1.9709	.29467	.86172
1.31	3.7062	.56893	.26982	1.7182	.23507	1.9880	.29842	.86428
1.32	3.7434	.57327	.26714	1.7381	.24009	2.0053	.30217	.86678
1.33	3.7810	.57761	.26448	1.7583	.24509	2.0228	.30594	.86925
1.34	3.8190	.58195	.26185	1.7786	.25008	2.0404	.30972	.87167
1.35	3.8574	.58630	.25924	1.7991	.25505	2.0583	.31352	.87405
1.36	3.8962	.59064	.25666	1.8198	.26002	2.0764	.31732	.87639
1.37	3.9354	.59498	.25411	1.8406	.26496	2.0947	.32113	.87869
1.38	3.9749	.59933	.25158	1.8617	.26990	2.1132	.32495	.88095
1.39	4.0149	.60367	.24908	1.8829	.27482	2.1320	.32878	.88317
1.40	4.0552	.60801	.24660	1.9043	.27974	2.1509	.33262	.88535
1.41	4.0960	.61236	.24414	1.9259	.28464	2.1700	.33647	.88749
1.42	4.1371	.61670	.24171	1.9477	.28952	2.1894	.34033	.88960
1.43	4.1787	.62104	.23931	1.9697	.29440	2.2090	.34420	.89167
1.44	4.2207	.62538	.23693	1.9919	.29926	2.2288	.34807	.89370
1.45	4.2631	.62973	.23457	2.0143	.30412	2.2488	.35196	.89569
1.46	4.3060	.63407	.23224	2.0369	.30896	2.2691	.35585	.89765
1.47	4.3492	.63841	.22993	2.0597	.31379	2.2896	.35976	.89958
1.48	4.3929	.64276	.22764	2.0827	.31862	2.3103	.36367	.90147
1.49	4.4371	.64710	.22537	2.1059	.32343	2.3312	.36759	.90332
1.50	4.4817	.65144	.22313	2.1293	.32823	2.3524	.37151	.90515

x	e^x		e^{-x} Value	$\sinh x$		$\cosh x$		$\tanh x$ Value
	Value	$\log_{10}$		Value	$\log_{10}$	Value	$\log_{10}$	
1.50	4.4817	.65144	.22313	2.1293	.32823	2.3524	.37151	.90515
1.51	4.5267	.65578	.22091	2.1529	.33303	2.3738	.37545	.90694
1.52	4.5722	.66013	.21871	2.1768	.33781	2.3955	.37939	.90870
1.53	4.6182	.66447	.21654	2.2008	.34258	2.4174	.38334	.91042
1.54	4.6646	.66881	.21438	2.2251	.34735	2.4395	.38730	.91212
1.55	4.7115	.67316	.21225	2.2496	.35211	2.4619	.39126	.91379
1.56	4.7588	.67750	.21014	2.2743	.35686	2.4845	.39524	.91542
1.57	4.8066	.68184	.20805	2.2993	.36160	2.5073	.39921	.91703
1.58	4.8550	.68619	.20598	2.3245	.36633	2.5305	.40320	.91860
1.59	4.9037	.69053	.20393	2.3499	.37105	2.5538	.40719	.92015
1.60	4.9530	.69487	.20190	2.3756	.37577	2.5775	.41119	.92167
1.61	5.0028	.69921	.19989	2.4015	.38048	2.6013	.41520	.92316
1.62	5.0531	.70356	.19790	2.4276	.38518	2.6255	.41921	.92462
1.63	5.1039	.70790	.19593	2.4540	.38987	2.6499	.42323	.92606
1.64	5.1552	.71224	.19398	2.4806	.39456	2.6746	.42725	.92747
1.65	5.2070	.71659	.19205	2.5075	.39923	2.6995	.43129	.92886
1.66	5.2593	.72093	.19014	2.5345	.40391	2.7247	.43532	.93022
1.67	5.3122	.72527	.18825	2.5620	.40857	2.7502	.43937	.93155
1.68	5.3656	.72961	.18637	2.5896	.41323	2.7760	.44341	.93286
1.69	5.4195	.73396	.18452	2.6175	.41788	2.8020	.44747	.93415
1.70	5.4739	.73830	.18268	2.6456	.42253	2.8283	.45153	.93541
1.71	5.5290	.74264	.18087	2.6740	.42717	2.8549	.45559	.93665
1.72	5.5845	.74699	.17907	2.7027	.43180	2.8818	.45966	.93786
1.73	5.6407	.75133	.17728	2.7317	.43643	2.9090	.46374	.93906
1.74	5.6973	.75567	.17552	2.7609	.44105	2.9364	.46782	.94023
1.75	5.7546	.76002	.17377	2.7904	.44567	2.9642	.47191	.94138
1.76	5.8124	.76436	.17204	2.8202	.45028	2.9922	.47600	.94250
1.77	5.8709	.76870	.17033	2.8503	.45488	3.0206	.48009	.94361
1.78	5.9299	.77304	.16864	2.8806	.45948	3.0492	.48419	.94470
1.79	5.9895	.77739	.16696	2.9112	.46408	3.0782	.48830	.94576
1.80	6.0496	.78173	.16530	2.9422	.46867	3.1075	.49241	.94681
1.81	6.1104	.78607	.16365	2.9734	.47325	3.1371	.49652	.94783
1.82	6.1719	.79042	.16203	3.0049	.47783	3.1669	.50064	.94884
1.83	6.2339	.79476	.16041	3.0367	.48241	3.1972	.50476	.94983
1.84	6.2965	.79910	.15882	3.0689	.48698	3.2277	.50889	.95080
1.85	6.3598	.80344	.15724	3.1013	.49154	3.2585	.51302	.95175
1.86	6.4237	.80779	.15567	3.1340	.49610	3.2897	.51716	.95268
1.87	6.4883	.81213	.15412	3.1671	.50066	3.3212	.52130	.95359
1.88	6.5535	.81647	.15259	3.2005	.50521	3.3530	.52544	.95449
1.89	6.6194	.82082	.15107	3.2341	.50976	3.3852	.52959	.95537
1.90	6.6859	.82516	.14957	3.2682	.51430	3.4177	.53374	.95624
1.91	6.7531	.82950	.14808	3.3025	.51884	3.4506	.53789	.95709
1.92	6.8210	.83385	.14661	3.3372	.52338	3.4838	.54205	.95792
1.93	6.8895	.83819	.14515	3.3722	.52791	3.5173	.54621	.95873
1.94	6.9588	.84253	.14370	3.4075	.53244	3.5512	.55038	.95953
1.95	7.0287	.84687	.14227	3.4432	.53696	3.5855	.55455	.96032
1.96	7.0993	.85122	.14086	3.4792	.54148	3.6201	.55872	.96109
1.97	7.1707	.85556	.13946	3.5156	.54600	3.6551	.56290	.96185
1.98	7.2427	.85990	.13807	3.5523	.55051	3.6904	.56707	.96259
1.99	7.3155	.86425	.13670	3.5894	.55502	3.7261	.57126	.96331
2.00	7.3891	.86859	.13534	3.6269	.55953	3.7622	.57544	.96403

x	e^x		e^{-x}	$\text{Sinh } x$		$\text{Cosh } x$		$\text{Tanh } x$
	Value	Log_{10}	Value	Value	Log_{10}	Value	Log_{10}	Value
2.00	7.3891	.86859	.13534	3.6269	.55953	3.7622	.57544	.96403
2.01	7.4633	.87293	.13399	3.6647	.56403	3.7987	.57963	.96473
2.02	7.5383	.87727	.13266	3.7028	.56853	3.8355	.58382	.96541
2.03	7.6141	.88162	.13134	3.7414	.57303	3.8727	.58802	.96609
2.04	7.6906	.88596	.13003	3.7803	.57753	3.9103	.59221	.96675
2.05	7.7679	.89030	.12873	3.8196	.58202	3.9483	.59641	.96740
2.06	7.8460	.89465	.12745	3.8593	.58650	3.9867	.60061	.96803
2.07	7.9248	.89899	.12619	3.8993	.59099	4.0255	.60482	.96865
2.08	8.0045	.90333	.12493	3.9398	.59547	4.0647	.60903	.96926
2.09	8.0849	.90768	.12369	3.9806	.59995	4.1043	.61324	.96986
2.10	8.1662	.91202	.12246	4.0219	.60443	4.1443	.61745	.97045
2.11	8.2482	.91636	.12124	4.0635	.60890	4.1847	.62167	.97103
2.12	8.3311	.92070	.12003	4.1056	.61337	4.2256	.62589	.97159
2.13	8.4149	.92505	.11884	4.1480	.61784	4.2669	.63011	.97215
2.14	8.4994	.92939	.11765	4.1909	.62231	4.3085	.63433	.97269
2.15	8.5849	.93373	.11648	4.2342	.62677	4.3507	.63856	.97323
2.16	8.6711	.93808	.11533	4.2779	.63123	4.3932	.64278	.97375
2.17	8.7583	.94242	.11418	4.3221	.63569	4.4362	.64701	.97426
2.18	8.8463	.94676	.11304	4.3666	.64015	4.4797	.65125	.97477
2.19	8.9352	.95110	.11192	4.4116	.64460	4.5236	.65548	.97526
2.20	9.0250	.95545	.11080	4.4571	.64905	4.5679	.65972	.97574
2.21	9.1157	.95979	.10970	4.5030	.65350	4.6127	.66396	.97622
2.22	9.2073	.96413	.10861	4.5494	.65795	4.6580	.66820	.97668
2.23	9.2999	.96848	.10753	4.5962	.66240	4.7037	.67244	.97714
2.24	9.3933	.97282	.10646	4.6434	.66684	4.7499	.67668	.97759
2.25	9.4877	.97716	.10540	4.6912	.67128	4.7966	.68093	.97803
2.26	9.5831	.98151	.10435	4.7394	.67572	4.8437	.68518	.97846
2.27	9.6794	.98585	.10331	4.7880	.68016	4.8914	.68943	.97888
2.28	9.7767	.99019	.10228	4.8372	.68459	4.9395	.69368	.97929
2.29	9.8749	.99453	.10127	4.8868	.68903	4.9881	.69794	.97970
2.30	9.9742	.99888	.10026	4.9370	.69346	5.0372	.70219	.98010
2.31	10.074	.00322	.09926	4.9876	.69789	5.0868	.70645	.98049
2.32	10.176	.00756	.09827	5.0387	.70232	5.1370	.71071	.98087
2.33	10.278	.01191	.09730	5.0903	.70675	5.1876	.71497	.98124
2.34	10.381	.01625	.09633	5.1425	.71117	5.2388	.71923	.98161
2.35	10.486	.02059	.09537	5.1951	.71559	5.2905	.72349	.98197
2.36	10.591	.02493	.09442	5.2483	.72002	5.3427	.72776	.98233
2.37	10.697	.02928	.09348	5.3020	.72444	5.3954	.73203	.98267
2.38	10.805	.03362	.09255	5.3562	.72885	5.4487	.73630	.98301
2.39	10.913	.03796	.09163	5.4109	.73327	5.5026	.74056	.98335
2.40	11.023	.04231	.09072	5.4662	.73769	5.5569	.74484	.98367
2.41	11.134	.04665	.08982	5.5221	.74210	5.6119	.74911	.98400
2.42	11.246	.05099	.08892	5.5785	.74652	5.6674	.75338	.98431
2.43	11.359	.05534	.08804	5.6354	.75093	5.7235	.75766	.98462
2.44	11.473	.05968	.08716	5.6929	.75534	5.7801	.76194	.98492
2.45	11.588	.06402	.08629	5.7510	.75975	5.8373	.76621	.98522
2.46	11.705	.06836	.08543	5.8097	.76415	5.8951	.77049	.98551
2.47	11.822	.07271	.08458	5.8689	.76856	5.9535	.77477	.98579
2.48	11.941	.07705	.08374	5.9288	.77296	6.0125	.77906	.98607
2.49	12.061	.08139	.08291	5.9892	.77737	6.0721	.78334	.98635
2.50	12.182	.08574	.08208	6.0502	.78177	6.1323	.78762	.98661

x	e^x		e^{-x}	$\sinh x$		$\cosh x$		$\tanh x$
	Value	Log ₁₀	Value	Value	Log ₁₀	Value	Log ₁₀	Value
2.50	12.182	.08574	.08208	6.0502	.78177	6.1323	.78762	.98661
2.51	12.305	.09008	.08127	6.1118	.78617	6.1931	.79191	.98688
2.52	12.429	.09442	.08046	6.1741	.79057	6.2545	.79619	.98714
2.53	12.554	.09877	.07966	6.2369	.79497	6.3166	.80048	.98739
2.54	12.680	.10311	.07887	6.3004	.79937	6.3793	.80477	.98764
2.55	12.807	.10745	.07808	6.3645	.80377	6.4426	.80906	.98788
2.56	12.936	.11179	.07730	6.4293	.80816	6.5066	.81335	.98812
2.57	13.066	.11614	.07654	6.4946	.81256	6.5712	.81764	.98835
2.58	13.197	.12048	.07577	6.5607	.81695	6.6365	.82194	.98858
2.59	13.330	.12482	.07502	6.6274	.82134	6.7024	.82623	.98881
2.60	13.464	.12917	.07427	6.6947	.82573	6.7690	.83052	.98903
2.61	13.599	.13351	.07353	6.7628	.83012	6.8363	.83482	.98924
2.62	13.736	.13785	.07280	6.8315	.83451	6.9043	.83912	.98946
2.63	13.874	.14219	.07208	6.9008	.83890	6.9729	.84341	.98966
2.64	14.013	.14654	.07136	6.9709	.84329	7.0423	.84771	.98987
2.65	14.154	.15088	.07065	7.0417	.84768	7.1123	.85201	.99007
2.66	14.296	.15522	.06995	7.1132	.85206	7.1831	.85631	.99026
2.67	14.440	.15957	.06925	7.1854	.85645	7.2546	.86061	.99045
2.68	14.585	.16391	.06856	7.2583	.86083	7.3268	.86492	.99064
2.69	14.732	.16825	.06788	7.3319	.86522	7.3998	.86922	.99083
2.70	14.880	.17260	.06721	7.4063	.86960	7.4735	.87352	.99101
2.71	15.029	.17694	.06654	7.4814	.87398	7.5479	.87783	.99118
2.72	15.180	.18128	.06587	7.5572	.87836	7.6231	.88213	.99136
2.73	15.333	.18562	.06522	7.6338	.88274	7.6991	.88644	.99153
2.74	15.487	.18997	.06457	7.7112	.88712	7.7758	.89074	.99170
2.75	15.643	.19431	.06393	7.7894	.89150	7.8533	.89505	.99186
2.76	15.800	.19865	.06329	7.8683	.89588	7.9316	.89936	.99202
2.77	15.959	.20300	.06266	7.9480	.90026	8.0106	.90367	.99218
2.78	16.119	.20734	.06204	8.0285	.90463	8.0905	.90798	.99233
2.79	16.281	.21168	.06142	8.1098	.90901	8.1712	.91229	.99248
2.80	16.445	.21602	.06081	8.1919	.91339	8.2527	.91660	.99263
2.81	16.610	.22037	.06020	8.2749	.91776	8.3351	.92091	.99278
2.82	16.777	.22471	.05961	8.3586	.92213	8.4182	.92522	.99292
2.83	16.945	.22905	.05901	8.4432	.92651	8.5022	.92953	.99306
2.84	17.116	.23340	.05843	8.5287	.93088	8.5871	.93385	.99320
2.85	17.288	.23774	.05784	8.6150	.93525	8.6728	.93816	.99333
2.86	17.462	.24208	.05727	8.7021	.93963	8.7594	.94247	.99346
2.87	17.637	.24643	.05670	8.7902	.94400	8.8469	.94679	.99359
2.88	17.814	.25077	.05613	8.8791	.94837	8.9352	.95110	.99372
2.89	17.993	.25511	.05558	8.9689	.95274	9.0244	.95542	.99384
2.90	18.174	.25945	.05502	9.0596	.95711	9.1146	.95974	.99396
2.91	18.357	.26380	.05448	9.1512	.96148	9.2056	.96405	.99408
2.92	18.541	.26814	.05393	9.2437	.96584	9.2976	.96837	.99420
2.93	18.728	.27248	.05340	9.3371	.97021	9.3905	.97269	.99431
2.94	18.916	.27683	.05287	9.4315	.97458	9.4844	.97701	.99443
2.95	19.106	.28117	.05234	9.5268	.97895	9.5791	.98133	.99454
2.96	19.298	.28551	.05182	9.6231	.98331	9.6749	.98565	.99464
2.97	19.492	.28985	.05130	9.7203	.98768	9.7716	.98997	.99475
2.98	19.688	.29420	.05079	9.8185	.99205	9.8693	.99429	.99485
2.99	19.886	.29854	.05029	9.9177	.99641	9.9680	.99861	.99496
3.00	20.086	.30288	.04979	10.018	.00078	10.068	.00293	.99505

x	e^x		e^{-x}	$\text{Sinh } x$		$\text{Cosh } x$		$\text{Tanh } x$
	Value	Log_{10}	Value	Value	Log_{10}	Value	Log_{10}	Value
3.00	20.086	.30288	.04979	10.018	.00078	10.068	.00293	.99505
3.05	21.115	.32460	.04736	10.534	.02259	10.581	.02454	.99552
3.10	22.198	.34631	.04505	11.076	.04440	11.122	.04616	.99595
3.15	23.336	.36803	.04285	11.646	.06619	11.690	.06780	.99631
3.20	24.533	.38974	.04076	12.246	.08799	12.287	.08943	.99668
3.25	25.790	.41146	.03877	12.876	.10977	12.915	.11108	.99700
3.30	27.113	.43317	.03688	13.538	.13155	13.575	.13273	.99728
3.35	28.503	.45489	.03508	14.234	.15332	14.269	.15439	.99754
3.40	29.964	.47660	.03337	14.965	.17509	14.999	.17605	.99777
3.45	31.500	.49832	.03175	15.734	.19685	15.766	.19772	.99799
3.50	33.115	.52003	.03020	16.543	.21860	16.573	.21940	.99818
3.55	34.813	.54175	.02872	17.392	.24036	17.421	.24107	.99833
3.60	36.598	.56346	.02732	18.286	.26211	18.313	.26275	.99851
3.65	38.475	.58517	.02599	19.224	.28385	19.250	.28444	.99865
3.70	40.447	.60689	.02472	20.211	.30559	20.236	.30612	.99878
3.75	42.521	.62860	.02352	21.249	.32733	21.272	.32781	.99889
3.80	44.701	.65032	.02237	22.339	.34907	22.362	.34951	.99900
3.85	46.993	.67203	.02128	23.486	.37081	23.507	.37120	.99909
3.90	49.402	.69375	.02024	24.691	.39254	24.711	.39290	.99918
3.95	51.935	.71546	.01925	25.958	.41427	25.977	.41459	.99926
4.00	54.598	.73718	.01832	27.290	.43600	27.308	.43629	.99933
4.10	60.340	.78061	.01657	30.162	.47946	30.178	.47970	.99945
4.20	66.686	.82404	.01500	33.336	.52291	33.351	.52310	.99955
4.30	73.700	.86747	.01357	36.843	.56636	36.857	.56652	.99963
4.40	81.451	.91090	.01227	40.719	.60980	40.732	.60993	.99970
4.50	90.017	.95433	.01111	45.003	.65324	45.014	.65335	.99975
4.60	99.484	.99775	.01095	49.737	.69668	49.747	.69677	.99980
4.70	109.95	.04118	.00910	54.969	.74012	54.978	.74019	.99983
4.80	121.51	.08461	.00823	60.751	.78355	60.759	.78361	.99986
4.90	134.29	.12804	.00745	67.141	.82699	67.149	.82704	.99989
5.00	148.41	.17147	.00674	74.203	.87042	74.210	.87046	.99991
5.10	164.02	.21490	.00610	82.011	.91386	82.014	.91389	.99993
5.20	181.27	.25833	.00552	90.633	.95729	90.639	.95731	.99994
5.30	200.34	.30176	.00499	100.17	.00074	100.17	.00074	.99995
5.40	221.41	.34519	.00452	110.70	.04415	110.71	.04417	.99996
5.50	244.69	.38862	.00409	122.34	.08758	122.35	.08760	.99997
5.60	270.43	.43205	.00370	135.21	.13101	135.22	.13103	.99997
5.70	298.87	.47548	.00335	149.43	.17444	149.44	.17445	.99998
5.80	330.30	.51891	.00303	165.15	.21787	165.15	.21788	.99998
5.90	365.04	.56234	.00274	182.52	.26130	182.52	.26131	.99998
6.00	403.43	.60577	.00248	201.71	.30473	201.72	.30474	.99999
6.25	518.01	.71434	.00193	259.01	.41331	259.01	.41331	.99999
6.50	665.14	.82291	.00150	332.57	.52188	332.57	.52189	1.0000
6.75	854.06	.93149	.00117	427.03	.63046	427.03	.63046	1.0000
7.00	1096.6	.04006	.00091	548.32	.73903	548.32	.73903	1.0000
7.50	1808.0	.25721	.00055	904.02	.95618	904.02	.95618	1.0000
8.00	2981.0	.47436	.00034	1490.5	.17333	1490.5	.17333	1.0000
8.50	4914.8	.69150	.00020	2457.4	.39047	2457.4	.39047	1.0000
9.00	8103.1	.90865	.00012	4051.5	.60762	4051.5	.60762	1.0000
9.50	13360.	.12580	.00007	6679.9	.82477	6679.9	.82477	1.0000
10.00	22026.	.34294	.00005	11013.	.04191	11013.	.04191	1.0000

[Characteristics of Logarithms omitted — determine by rule from the value]

°	0'	10'	20'	30'	40'	50'
	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀
0	.0000	.0000 4.3254	.0000 4.9275	.0000 5.2796	.0000 5.5295	.0001 5.7223
1	.0001 5.8817	.0001 6.0156	.0001 6.1315	.0002 .2338	.0002 .3254	.0003 .4081
2	.0003 .4837	.0004 .5532	.0004 .6176	.0005 .6775	.0005 .7336	.0006 .7862
3	.0007 .8358	.0008 .8828	.0008 .9273	.0009 .9697	.0010 .1011	.0011 .0487
4	.0012 .0856	.0013 .1211	.0014 .1551	.0015 .1879	.0017 .2195	.0018 .2499
5	.0019 .2793	.0020 .3078	.0022 .3354	.0023 .3621	.0024 .3880	.0026 .4132
6	.0027 .4376	.0029 .4614	.0031 .4845	.0032 .5071	.0034 .5290	.0036 .5504
7	.0037 .5713	.0039 .5918	.0041 .6117	.0043 .6312	.0045 .6503	.0047 .6689
8	.0049 .6872	.0051 .7051	.0053 .7226	.0055 .7397	.0057 .7566	.0059 .7731
9	.0062 .7893	.0064 .8052	.0066 .8208	.0069 .8361	.0071 .8512	.0073 .8660
10	.0076 .8806	.0079 .8949	.0081 .9090	.0084 .9229	.0086 .9365	.0089 .9499
11	.0092 .9631	.0095 .9762	.0097 .9890	.0100 .0016	.0103 .0141	.0106 .0264
12	.0109 .0385	.0112 .0504	.0115 .0622	.0119 .0738	.0122 .0853	.0125 .0966
13	.0128 .1077	.0131 .1187	.0135 .1296	.0138 .1404	.0142 .1510	.0145 .1614
14	.0149 .1718	.0152 .1820	.0156 .1921	.0159 .2021	.0163 .2120	.0167 .2218
15	.0170 .2314	.0174 .2401	.0178 .2504	.0182 .2597	.0186 .2689	.0190 .2781
16	.0194 .2871	.0198 .2961	.0202 .3049	.0206 .3137	.0210 .3223	.0214 .3309
17	.0218 .3394	.0223 .3478	.0227 .3561	.0231 .3644	.0236 .3726	.0240 .3806
18	.0245 .3887	.0249 .3966	.0254 .4045	.0258 .4123	.0263 .4200	.0268 .4276
19	.0272 .4352	.0277 .4427	.0282 .4502	.0287 .4576	.0292 .4649	.0297 .4721
20	.0302 .4793	.0307 .4865	.0312 .4936	.0317 .5006	.0322 .5075	.0327 .5144
21	.0332 .5213	.0337 .5281	.0343 .5348	.0348 .5415	.0353 .5481	.0359 .5547
22	.0364 .5612	.0370 .5677	.0375 .5741	.0381 .5805	.0386 .5868	.0392 .5931
23	.0397 .5993	.0403 .6055	.0409 .6116	.0415 .6177	.0421 .6238	.0426 .6298
24	.0432 .6357	.0438 .6417	.0444 .6476	.0450 .6534	.0456 .6592	.0462 .6650
25	.0468 .6707	.0475 .6764	.0481 .6820	.0487 .6876	.0493 .6932	.0500 .6987
26	.0506 .7042	.0512 .7096	.0519 .7151	.0525 .7204	.0532 .7258	.0538 .7311
27	.0545 .7364	.0552 .7416	.0558 .7468	.0565 .7520	.0572 .7572	.0578 .7623
28	.0585 .7673	.0592 .7724	.0599 .7774	.0606 .7824	.0613 .7874	.0620 .7923
29	.0627 .7972	.0634 .8020	.0641 .8069	.0648 .8117	.0655 .8165	.0663 .8213
30	.0670 .8260	.0677 .8307	.0684 .8354	.0692 .8400	.0699 .8446	.0707 .8492
31	.0714 .8538	.0722 .8583	.0729 .8629	.0737 .8673	.0744 .8718	.0752 .8763
32	.0760 .8807	.0767 .8851	.0775 .8894	.0783 .8938	.0791 .8981	.0799 .9024
33	.0807 .9067	.0815 .9109	.0823 .9152	.0831 .9194	.0839 .9236	.0847 .9277
34	.0855 .9319	.0863 .9360	.0871 .9401	.0879 .9442	.0888 .9482	.0896 .9523
35	.0904 .9563	.0913 .9603	.0921 .9643	.0929 .9682	.0938 .9722	.0946 .9761
36	.0955 .9800	.0963 .9838	.0972 .9877	.0981 .9915	.0989 .9954	.0998 .9992
37	.1007 .0030	.1016 .0067	.1024 .0105	.1033 .0142	.1042 .0179	.1051 .0216
38	.1060 .0253	.1069 .0289	.1078 .0326	.1087 .0362	.1096 .0398	.1105 .0434
39	.1114 .0470	.1123 .0505	.1133 .0541	.1142 .0576	.1151 .0611	.1160 .0646
40	.1170 .0681	.1179 .0716	.1189 .0750	.1198 .0784	.1207 .0817	.1217 .0853
41	.1226 .0887	.1236 .0920	.1246 .0954	.1255 .0987	.1265 .1021	.1275 .1054
42	.1284 .1087	.1294 .1119	.1304 .1152	.1314 .1185	.1323 .1217	.1333 .1249
43	.1343 .1282	.1353 .1314	.1363 .1345	.1373 .1377	.1383 .1409	.1393 .1440
44	.1403 .1472	.1413 .1503	.1424 .1534	.1434 .1565	.1444 .1596	.1454 .1626
45	.1464 .1657	.1475 .1687	.1485 .1718	.1495 .1748	.1506 .1778	.1516 .1808
46	.1527 .1838	.1538 .1867	.1548 .1897	.1558 .1926	.1569 .1956	.1579 .1985
47	.1590 .2014	.1600 .2043	.1611 .2072	.1622 .2101	.1633 .2129	.1644 .2158
48	.1654 .2186	.1665 .2215	.1676 .2243	.1687 .2271	.1698 .2299	.1709 .2327
49	.1720 .2355	.1731 .2382	.1742 .2410	.1753 .2437	.1764 .2465	.1775 .2492
50	.1786 .2519	.1797 .2546	.1808 .2573	.1820 .2600	.1831 .2627	.1842 .2653
51	.1853 .2680	.1865 .2706	.1876 .2732	.1887 .2759	.1899 .2785	.1910 .2811
52	.1922 .2837	.1933 .2863	.1945 .2888	.1956 .2914	.1968 .2940	.1979 .2965
53	.1991 .2991	.2003 .3016	.2014 .3041	.2026 .3066	.2038 .3091	.2049 .3116
54	.2061 .3141	.2073 .3166	.2085 .3190	.2096 .3215	.2108 .3239	.2120 .3264
55	.2132 .3288	.2144 .3312	.2156 .3336	.2168 .3361	.2180 .3384	.2192 .3408
56	.2204 .3432	.2216 .3456	.2228 .3480	.2240 .3503	.2252 .3527	.2265 .3550
57	.2277 .3573	.2289 .3596	.2301 .3620	.2314 .3643	.2326 .3666	.2338 .3689
58	.2350 .3711	.2363 .3734	.2375 .3757	.2388 .3779	.2400 .3802	.2412 .3824
59	.2425 .3847	.2437 .3869	.2450 .3891	.2462 .3913	.2475 .3935	.2487 .3957

[Characteristics of Logarithms omitted — determine by rule from the value]

•	0'	10'	20'	30'	40'	50'
	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀	Value Log ₁₀
60	.2500 .3979	.2513 .4001	.2525 .4023	.2538 .4045	.2551 .4066	.2563 .4088
61	.2576 .4109	.2589 .4131	.2601 .4152	.2614 .4173	.2627 .4195	.2640 .4216
62	.2653 .4237	.2665 .4258	.2678 .4279	.2691 .4300	.2704 .4320	.2717 .4341
63	.2730 .4362	.2743 .4382	.2756 .4403	.2769 .4423	.2782 .4444	.2795 .4464
64	.2808 .4484	.2821 .4504	.2834 .4524	.2847 .4545	.2861 .4565	.2874 .4584
65	.2887 .4604	.2900 .4624	.2913 .4644	.2927 .4664	.2940 .4683	.2953 .4703
66	.2966 .4722	.2980 .4742	.2993 .4761	.3006 .4780	.3020 .4799	.3033 .4819
67	.3046 .4838	.3060 .4857	.3073 .4876	.3087 .4895	.3100 .4914	.3113 .4932
68	.3127 .4951	.3140 .4970	.3154 .4989	.3167 .5007	.3181 .5026	.3195 .5044
69	.3208 .5063	.3222 .5081	.3235 .5099	.3249 .5117	.3263 .5136	.3276 .5154
70	.3290 .5172	.3304 .5190	.3317 .5208	.3331 .5226	.3345 .5244	.3358 .5261
71	.3372 .5279	.3386 .5297	.3400 .5314	.3413 .5332	.3427 .5349	.3441 .5367
72	.3455 .5384	.3469 .5402	.3483 .5419	.3496 .5436	.3510 .5454	.3524 .5471
73	.3538 .5488	.3552 .5505	.3566 .5522	.3580 .5539	.3594 .5556	.3608 .5572
74	.3622 .5589	.3636 .5606	.3650 .5623	.3664 .5639	.3678 .5656	.3692 .5672
75	.3706 .5689	.3720 .5705	.3734 .5722	.3748 .5738	.3762 .5754	.3776 .5771
76	.3790 .5787	.3805 .5803	.3819 .5819	.3833 .5835	.3847 .5851	.3861 .5867
77	.3875 .5883	.3889 .5899	.3904 .5915	.3918 .5930	.3932 .5946	.3946 .5962
78	.3960 .5977	.3975 .5993	.3989 .6009	.4003 .6024	.4017 .6039	.4032 .6055
79	.4046 .6070	.4060 .6085	.4075 .6101	.4089 .6116	.4103 .6131	.4117 .6146
80	.4132 .6161	.4146 .6176	.4160 .6191	.4175 .6206	.4189 .6221	.4203 .6236
81	.4218 .6251	.4232 .6266	.4247 .6280	.4261 .6295	.4275 .6310	.4290 .6324
82	.4304 .6339	.4319 .6353	.4333 .6368	.4347 .6382	.4362 .6397	.4376 .6411
83	.4391 .6425	.4405 .6440	.4420 .6454	.4434 .6468	.4448 .6482	.4463 .6496
84	.4477 .6510	.4492 .6524	.4506 .6538	.4521 .6552	.4535 .6566	.4550 .6580
85	.4564 .6594	.4579 .6607	.4593 .6621	.4608 .6635	.4622 .6649	.4637 .6662
86	.4651 .6676	.4666 .6689	.4680 .6703	.4695 .6716	.4709 .6730	.4724 .6743
87	.4738 .6756	.4753 .6770	.4767 .6783	.4782 .6796	.4796 .6809	.4811 .6822
88	.4826 .6835	.4840 .6848	.4855 .6862	.4869 .6875	.4884 .6887	.4898 .6900
89	.4913 .6913	.4937 .6926	.4942 .6939	.4956 .6952	.4971 .6964	.4985 .6977
90	.5000 .6990	.5015 .7002	.5029 .7015	.5044 .7027	.5058 .7040	.5073 .7052
91	.5087 .7065	.5102 .7077	.5116 .7090	.5131 .7102	.5145 .7114	.5160 .7126
92	.5174 .7139	.5189 .7151	.5204 .7163	.5218 .7175	.5233 .7187	.5247 .7199
93	.5262 .7211	.5276 .7223	.5291 .7235	.5305 .7247	.5320 .7259	.5334 .7271
94	.5349 .7283	.5363 .7294	.5378 .7306	.5392 .7318	.5407 .7329	.5421 .7341
95	.5436 .7353	.5450 .7364	.5465 .7376	.5479 .7387	.5494 .7399	.5508 .7410
96	.5523 .7421	.5537 .7433	.5552 .7444	.5566 .7455	.5580 .7467	.5595 .7478
97	.5609 .7489	.5624 .7500	.5638 .7511	.5653 .7523	.5667 .7534	.5682 .7545
98	.5696 .7556	.5710 .7567	.5725 .7577	.5739 .7588	.5753 .7599	.5768 .7610
99	.5782 .7621	.5797 .7632	.5811 .7642	.5825 .7653	.5840 .7664	.5854 .7674
100	.5868 .7685	.5883 .7696	.5897 .7706	.5911 .7717	.5925 .7727	.5940 .7738
101	.5954 .7748	.5968 .7759	.5983 .7769	.5997 .7779	.6011 .7790	.6025 .7800
102	.6040 .7810	.6054 .7820	.6068 .7830	.6082 .7841	.6096 .7851	.6111 .7861
103	.6125 .7871	.6139 .7881	.6153 .7891	.6167 .7901	.6181 .7911	.6195 .7921
104	.6210 .7931	.6224 .7940	.6238 .7950	.6252 .7960	.6266 .7970	.6280 .7980
105	.6294 .7989	.6308 .7999	.6322 .8009	.6336 .8018	.6350 .8028	.6364 .8037
106	.6378 .8047	.6392 .8056	.6406 .8066	.6420 .8075	.6434 .8085	.6448 .8094
107	.6462 .8104	.6476 .8113	.6490 .8122	.6504 .8131	.6517 .8141	.6531 .8150
108	.6545 .8159	.6559 .8168	.6573 .8177	.6587 .8187	.6600 .8196	.6614 .8205
109	.6628 .8214	.6642 .8223	.6655 .8232	.6669 .8241	.6683 .8250	.6696 .8258
110	.6710 .8267	.6724 .8276	.6737 .8285	.6751 .8294	.6765 .8302	.6778 .8311
111	.6792 .8320	.6805 .8329	.6819 .8337	.6833 .8346	.6846 .8354	.6860 .8363
112	.6873 .8371	.6887 .8380	.6900 .8388	.6913 .8397	.6927 .8405	.6940 .8414
113	.6954 .8422	.6967 .8430	.6980 .8439	.6994 .8447	.7007 .8455	.7020 .8464
114	.7034 .8472	.7047 .8480	.7060 .8488	.7073 .8496	.7087 .8504	.7100 .8513
115	.7113 .8521	.7126 .8529	.7139 .8537	.7153 .8545	.7166 .8553	.7179 .8561
116	.7192 .8568	.7205 .8576	.7218 .8584	.7231 .8592	.7244 .8600	.7257 .8608
117	.7270 .8615	.7283 .8623	.7296 .8631	.7309 .8638	.7322 .8646	.7335 .8654
118	.7347 .8661	.7360 .8669	.7373 .8676	.7386 .8684	.7399 .8691	.7411 .8699
119	.7424 .8706	.7437 .8714	.7449 .8721	.7462 .8729	.7475 .8736	.7487 .8743

[Characteristics of Logarithms omitted — determine by rule from the value]

°	0'		10'		20'		30'		40'		50'	
	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀
120	.7500	.8751	.7513	.8758	.7525	.8765	.7538	.8772	.7550	.8780	.7563	.8787
121	.7575	.8794	.7588	.8801	.7600	.8808	.7612	.8815	.7625	.8822	.7637	.8829
122	.7650	.8836	.7662	.8843	.7674	.8850	.7686	.8857	.7699	.8864	.7711	.8871
123	.7723	.8878	.7735	.8885	.7748	.8892	.7760	.8898	.7772	.8905	.7784	.8912
124	.7796	.8919	.7808	.8925	.7820	.8932	.7832	.8939	.7844	.8945	.7856	.8952
125	.7868	.8959	.7880	.8965	.7892	.8972	.7904	.8978	.7915	.8985	.7927	.8991
126	.7939	.8998	.7951	.9004	.7962	.9010	.7974	.9017	.7986	.9023	.7997	.9030
127	.8009	.9036	.8021	.9042	.8032	.9048	.8044	.9055	.8055	.9061	.8067	.9067
128	.8078	.9073	.8090	.9079	.8101	.9085	.8113	.9092	.8124	.9098	.8135	.9104
129	.8147	.9110	.8158	.9116	.8169	.9122	.8180	.9128	.8192	.9134	.8203	.9140
130	.8214	.9146	.8225	.9151	.8236	.9157	.8247	.9163	.8258	.9169	.8269	.9175
131	.8280	.9180	.8291	.9186	.8302	.9192	.8313	.9198	.8324	.9203	.8335	.9209
132	.8346	.9215	.8356	.9220	.8367	.9226	.8378	.9231	.8389	.9237	.8399	.9242
133	.8410	.9248	.8421	.9253	.8431	.9259	.8442	.9264	.8452	.9270	.8463	.9275
134	.8473	.9281	.8484	.9286	.8494	.9291	.8501	.9297	.8515	.9302	.8525	.9307
135	.8536	.9312	.8546	.9318	.8556	.9323	.8566	.9328	.8576	.9333	.8587	.9338
136	.8597	.9343	.8607	.9348	.8617	.9353	.8627	.9359	.8637	.9364	.8647	.9369
137	.8657	.9374	.8667	.9379	.8677	.9383	.8686	.9388	.8696	.9393	.8706	.9398
138	.8716	.9403	.8725	.9408	.8735	.9413	.8745	.9417	.8754	.9422	.8764	.9427
139	.8774	.9432	.8783	.9436	.8793	.9441	.8802	.9446	.8811	.9450	.8821	.9455
140	.8830	.9460	.8840	.9464	.8849	.9469	.8858	.9473	.8867	.9478	.8877	.9482
141	.8886	.9487	.8895	.9491	.8904	.9496	.8913	.9500	.8922	.9505	.8931	.9509
142	.8940	.9513	.8949	.9518	.8958	.9522	.8967	.9526	.8976	.9531	.8984	.9535
143	.8993	.9539	.9002	.9543	.9011	.9548	.9019	.9552	.9028	.9556	.9037	.9560
144	.9045	.9564	.9054	.9568	.9062	.9572	.9071	.9576	.9079	.9580	.9087	.9584
145	.9096	.9588	.9104	.9592	.9112	.9596	.9121	.9600	.9129	.9604	.9137	.9608
146	.9145	.9612	.9153	.9616	.9161	.9620	.9169	.9623	.9177	.9627	.9185	.9631
147	.9193	.9635	.9201	.9638	.9209	.9642	.9217	.9646	.9225	.9650	.9233	.9653
148	.9240	.9657	.9248	.9660	.9256	.9664	.9263	.9668	.9271	.9671	.9278	.9675
149	.9286	.9678	.9293	.9682	.9301	.9685	.9308	.9689	.9316	.9692	.9323	.9695
150	.9330	.9699	.9337	.9702	.9345	.9706	.9352	.9709	.9359	.9712	.9366	.9716
151	.9373	.9719	.9380	.9722	.9387	.9725	.9394	.9729	.9401	.9732	.9408	.9735
152	.9415	.9738	.9422	.9741	.9428	.9744	.9435	.9747	.9442	.9751	.9448	.9754
153	.9455	.9757	.9462	.9760	.9468	.9763	.9475	.9766	.9481	.9769	.9488	.9772
154	.9494	.9774	.9500	.9777	.9507	.9780	.9513	.9783	.9519	.9786	.9525	.9789
155	.9532	.9792	.9538	.9794	.9544	.9797	.9550	.9800	.9556	.9803	.9562	.9805
156	.9568	.9808	.9574	.9811	.9579	.9813	.9585	.9816	.9591	.9819	.9597	.9821
157	.9603	.9824	.9608	.9826	.9614	.9829	.9619	.9831	.9625	.9834	.9630	.9836
158	.9636	.9839	.9641	.9841	.9647	.9844	.9652	.9846	.9657	.9849	.9663	.9851
159	.9668	.9853	.9673	.9856	.9678	.9858	.9683	.9860	.9688	.9863	.9693	.9865
160	.9698	.9867	.9703	.9869	.9708	.9871	.9713	.9874	.9718	.9876	.9723	.9878
161	.9728	.9880	.9732	.9882	.9737	.9884	.9742	.9886	.9746	.9888	.9751	.9890
162	.9755	.9892	.9760	.9894	.9764	.9896	.9769	.9898	.9773	.9900	.9777	.9902
163	.9782	.9904	.9786	.9906	.9790	.9908	.9794	.9910	.9798	.9911	.9802	.9913
164	.9806	.9915	.9810	.9917	.9814	.9919	.9818	.9920	.9822	.9922	.9826	.9923
165	.9830	.9925	.9833	.9927	.9837	.9929	.9841	.9930	.9844	.9932	.9848	.9933
166	.9851	.9935	.9855	.9937	.9858	.9938	.9862	.9940	.9865	.9941	.9869	.9943
167	.9872	.9944	.9875	.9945	.9878	.9947	.9881	.9948	.9885	.9950	.9888	.9951
168	.9891	.9952	.9894	.9954	.9897	.9955	.9900	.9956	.9903	.9957	.9905	.9959
169	.9908	.9960	.9911	.9961	.9914	.9962	.9916	.9963	.9919	.9965	.9921	.9966
170	.9924	.9967	.9927	.9968	.9929	.9969	.9931	.9970	.9934	.9971	.9936	.9972
171	.9938	.9973	.9941	.9974	.9943	.9975	.9945	.9976	.9947	.9977	.9949	.9978
172	.9951	.9979	.9953	.9980	.9955	.9981	.9957	.9981	.9959	.9982	.9961	.9983
173	.9963	.9984	.9964	.9984	.9966	.9985	.9968	.9986	.9969	.9987	.9971	.9987
174	.9973	.9988	.9974	.9988	.9976	.9989	.9977	.9990	.9978	.9991	.9980	.9991
175	.9981	.9992	.9982	.9992	.9983	.9993	.9985	.9993	.9986	.9994	.9987	.9994
176	.9988	.9995	.9989	.9995	.9990	.9996	.9991	.9996	.9992	.9996	.9992	.9997
177	.9993	.9997	.9994	.9997	.9995	.9998	.9995	.9998	.9996	.9998	.9996	.9998
178	.9997	.9999	.9997	.9999	.9998	.9999	.9998	.9999	.9999	.9999	.9999	.9999
179	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.0000	1.0000	.0000

126 Table XI — Factor Table — Logarithms of Primes

If N is prime, its logarithm is given. If N is not prime, its factors are given.

N	1	3	7	9	N	$\log N$
10	0043213738	0128372247	0293837777	0374264979	2	301029995664
11	3·37	0530784435	3 ² ·13	7·17	3	477121254720
12	11 ²	3·41	1038037210	3·43	5	698970004336
13	1172712957	7·19	1367205672	1430148003	7	845098040014
14	3·47	11·13	3·7 ²	1731862684	11	041392685158
15	1789769473	3 ² ·17	1958996524	3·53	13	113943352537
16	7·23	2121876044	2227164711	13 ²	17	230448921378
17	3 ² ·19	2380461031	3·59	2528530310	19	278753600953
18	2576785749	3·61	11·17	3 ⁸ ·7	23	361727836018
19	2810333672	2855573090	2944662262	2988530764	29	462396997899
20	3·67	7·29	3 ² ·23	11·19	31	491361693834
21	3242824553	3·71	7·31	3·73	37	568201724067
22	13·17	3483048630	3560258572	3598354823	41	612783856720
23	3·7·11	3673559210	3·79	3783979009	43	633468455580
24	3820170426	3 ⁵	13·19	3·83	47	672097857936
25	396737215	11·23	4000331233	7·37	53	724275869601
26	3 ² ·29	4199557485	3·89	4297522800	59	770852011642
27	4329692909	3·7·13	4424797691	3 ² ·31	61	785329835011
28	4487063199	4517864355	7·41	17 ²	67	826074802701
29	3·97	4668676204	3 ⁸ ·11	13·23	71	851258348719
30	7·43	3·101	4871383755	3·103	73	863322860120
31	4927603890	4955443375	5010592622	11·29	79	897627091290
32	3·107	17·19	3·109	7·47	83	919078092376
33	5198279938	3 ² ·37	5276299009	3·113	89	949390006645
34	11·31	7 ³	5403294748	5428254270	97	986771734206
35	3 ⁸ ·13	5477747054	3·7·17	5550944486	1301	1142772966
36	19 ²	3·11 ²	5646660643	3 ² ·41	1303	1149444157
37	7·53	5717088318	13·29	5786392100	1307	1162755876
38	3·127	5831987740	3 ² ·43	5809496013	1319	1202447955
39	17·23	3·131	5987905068	3·7·19	1321	1209028176
40	6031443726	13·31	11·37	6117233080	1327	1228709229
41	3·137	7·59	3·139	6222140230	1361	1338581252
42	6242820958	3 ² ·47	7·61	3·11·13	1367	1357685146
43	6344772702	6364878964	19·23	6424645202	1373	1376705372
44	3 ² ·7 ²	6464037262	3·149	6522463410	1381	1401936786
45	11·41	3·151	6599162001	3 ⁸ ·17	1399	1458177145
46	6637009254	6655809910	6693168806	7·67	1409	1489109931
47	3·157	11·43	3 ² ·53	6803355134	1423	1532049001
48	13·37	3·7·23	6875289612	3·163	1427	1544239731
49	6910814921	17·29	7·71	6981005456	1429	1550322288
50	3·167	7015679851	3·13 ²	7067177823	1433	1562461904
51	7·73	3 ⁸ ·19	11·47	3·173	1439	1580607939
52	7168377233	7185016889	17·31	23 ²	1447	1604685311
53	3 ² ·59	13·41	3·179	7 ² ·11	1451	1616674124
54	7331972651	3·181	7379873263	3 ² ·61	1453	1622656143
55	19·29	7·79	7458551952	13·43	1459	1640552919
56	3·11·17	7505083949	34·7	7551122664	1471	1676126727
57	7566361082	3·191	7611758132	3·193	1481	1705550585
58	7·83	11·53	7686381012	19·31	1483	1711411510
59	3·197	7730546934	3·199	7774268224	1487	1723109685
60	7788744720	3 ² ·67	7831886911	3·7·29	1489	1728946978
61	13·47	7874604745	7902851640	7916906490	1493	1740598077
62	3 ⁸ ·23	7·89	3·11·19	17·37	1499	1758016328
63	8000293592	3·211	7 ² ·13	3 ² ·71	1511	1792644643
64	8068580295	8082109729	8109042807	11·59	1523	1826999033
65	3·7·31	8149131813	3 ² ·73	8188854146	1531	1849751907
66	8202014595	3·13·17	23·29	3·223	1543	1883659261
67	11·61	8280150642	8305886687	7·97	1549	1900514178
68	3·227	8344207037	3·229	13·53	1553	1911714557
69	8394780474	3 ² ·7·11	17·41	3·233	1559	1928461152

Factor Table — Logarithms of Primes

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If N is a prime, its logarithm is given. If N is not a prime, its factors are given.

N	1	3	7	9	N	$\text{Log } N$
70	8457180180	19·37	7·101	8506462352	1567	1950689965
71	32·79	23·31	3·239	8567288904	1571	1961761850
72	7·103	3·241	8615344109	3 ⁶	1579	1983821300
73	17·43	8651039746	11·67	8686414384	1583	1994809149
74	3·13·19	8709888138	32·83	7·107	1597	2033049161
75	8756399370	3·251	8790958795	3·11·23	1601	2043913319
76	8813846568	7·109	13·59	8859263398	1607	2060158768
77	3·257	8881794939	3·7·37	19·41	1609	2063560441
78	11·71	38·29	8959747324	3·263	1613	2076343674
79	7·113	13·61	9014583214	17·47	1619	2092468488
80	32·89	11·73	3·269	9079485216	1621	2097830148
81	9090208542	3·271	19·43	32·7·13	1627	2113875529
82	9143431571	9153988352	9175055096	918545306	1637	2140486791
83	3·277	72·17	38·31	9237619608	1637	2193225084
84	29 ²	3·281	7·11 ²	3·283	1663	2208922492
85	23·37	9309490312	9329808219	9339931638	1667	2219355998
86	3·7·41	9360107957	3·17 ²	11·79	1669	2224563367
87	13·67	32·97	9429995934	3·293	1693	2286569581
88	9449759084	9459607036	9479236198	7·127	1697	2296818423
89	34·11	19·47	3·13·23	29·31	1699	2301933789
90	17·53	3·7·43	9576072871	32·101	1709	2327420627
91	9595183770	11·83	7·131	9633155114	1721	2357808703
92	3·307	13·71	32·103	9680157140	1723	2362852774
93	72·19	3·311	9717395909	3·313	1733	2387985627
94	9735896234	23·41	9763499790	13·73	1741	2407987711
95	3·317	9790929006	3·11·29	7·137	1747	2422929050
96	31 ²	32·107	9854264741	3·17·19	1753	2437819161
97	9872192299	7·139	9898945637	11·89	1759	2452658395
98	32·109	9925535178	3·7·47	23·43	1777	2496874278
99	9960736545	3·331	9986951583	32·37	1783	2511513432
100	7·11·13	17·59	19·53	0038911662	1787	2521245525
101	3·337	0050094454	32·113	0081741840	1789	2526103406
102	0090257421	3·11·31	13·79	3·73	1801	2555137128
103	0132586653	0141093215	17·61	0166155476	1811	2579184503
104	3·347	7·149	3·349	0207754882	1823	2607866687
105	0216027160	34·13	7·151	3·353	1831	2626883443
106	0257153839	0265332645	11·97	0289777052	1847	2664668954
107	32·7·17	29·37	3·359	13·83	1861	2697463731
108	23·47	3·19 ²	0362295441	32·11 ²	1867	2711443179
109	0378247506	0386201619	0402066276	7·157	1871	2729737875
110	3·367	0425755124	38·41	0449315461	1873	2725377774
111	11·101	3·7·53	0480531731	3·373	1877	2744642726
112	19·59	0503797563	72·23	0526939419	1879	2739267801
113	3·13·29	11·103	3·379	17·67	1889	2762319579
114	7·163	32·127	31·37	3·383	1901	2789821169
115	0610755236	0618293073	13·89	19·61	1907	2803506930
116	33·43	0655797147	3·389	7·167	1913	2817149700
117	0685568951	3·17·23	11·107	32·131	1931	2857822738
118	0722498976	7·132	0744507190	29·41	1933	2862318540
119	3·397	0766404437	32·7·19	11·109	1949	2898118391
120	0795430074	3·401	17·71	3·13·31	1951	2902572694
121	7·173	0838608009	0852905782	23·53	1973	2961270853
122	3·11·37	0874264570	3·409	0896518829	1979	2964457942
123	0902580529	32·137	0923696996	3·7·59	1987	2981978671
124	17·73	11·113	29·43	0965624384	1993	2995072987
125	32·139	7·179	3·419	1000257301	1997	3003780649
126	13·97	3·421	7·181	33·47	1999	3008127941
127	31·41	19·67	1061908973	1068705445	2003	3016809493
128	3·7·61	1082266564	32·11·13	1102529174	2011	3034120706
129	1109262423	3·431	1129399761	3·433	2017	3047058982

AMOUNT OF ONE DOLLAR PRINCIPAL AT COMPOUND INTEREST AFTER *n* YEARS

<i>n</i>	2%	2½%	3%	3½%	4%	4½%	5%	6%	7%
1	1.0200	1.0250	1.0300	1.0350	1.0400	1.0450	1.0500	1.0600	1.0700
2	1.0404	1.0506	1.0609	1.0712	1.0816	1.0920	1.1025	1.1236	1.1449
3	1.0612	1.0769	1.0927	1.1087	1.1249	1.1412	1.1576	1.1910	1.2250
4	1.0824	1.1038	1.1255	1.1475	1.1699	1.1925	1.2155	1.2625	1.3108
5	1.1041	1.1314	1.1593	1.1877	1.2167	1.2462	1.2763	1.3382	1.4026
6	1.1262	1.1597	1.1941	1.2293	1.2653	1.3023	1.3401	1.4185	1.5007
7	1.1487	1.1887	1.2299	1.2723	1.3159	1.3609	1.4071	1.5036	1.6058
8	1.1717	1.2184	1.2668	1.3168	1.3686	1.4221	1.4775	1.5938	1.7182
9	1.1951	1.2489	1.3048	1.3629	1.4233	1.4861	1.5513	1.6895	1.8385
10	1.2190	1.2801	1.3439	1.4106	1.4802	1.5530	1.6289	1.7908	1.9672
11	1.2434	1.3121	1.3842	1.4600	1.5395	1.6229	1.7103	1.8983	2.1049
12	1.2682	1.3449	1.4258	1.5111	1.6010	1.6959	1.7959	2.0122	2.2522
13	1.2936	1.3785	1.4685	1.5640	1.6651	1.7722	1.8856	2.1329	2.4098
14	1.3195	1.4130	1.5126	1.6187	1.7317	1.8519	1.9790	2.2609	2.5785
15	1.3459	1.4483	1.5580	1.6753	1.8009	1.9353	2.0789	2.3966	2.7590
16	1.3728	1.4845	1.6047	1.7340	1.8730	2.0224	2.1829	2.5404	2.9522
17	1.4002	1.5216	1.6528	1.7947	1.9479	2.1134	2.2920	2.6928	3.1588
18	1.4282	1.5597	1.7024	1.8575	2.0258	2.2085	2.4066	2.8543	3.3799
19	1.4568	1.5987	1.7535	1.9225	2.1068	2.3079	2.5270	3.0256	3.6165
20	1.4859	1.6386	1.8061	1.9898	2.1911	2.4117	2.6533	3.2071	3.8697
21	1.5157	1.6796	1.8603	2.0594	2.2788	2.5202	2.7860	3.3996	4.1406
22	1.5460	1.7216	1.9161	2.1315	2.3699	2.6337	2.9253	3.6035	4.4304
23	1.5769	1.7646	1.9736	2.2061	2.4647	2.7522	3.0715	3.8197	4.7405
24	1.6084	1.8087	2.0328	2.2833	2.5633	2.8760	3.2251	4.0489	5.0724
25	1.6406	1.8539	2.0938	2.3632	2.6658	3.0054	3.3864	4.2919	5.4274
26	1.6734	1.9003	2.1566	2.4460	2.7725	3.1407	3.5557	4.5494	5.8074
27	1.7069	1.9478	2.2213	2.5316	2.8834	3.2820	3.7335	4.8223	6.2139
28	1.7410	1.9965	2.2879	2.6202	2.9987	3.4297	3.9201	5.1117	6.6488
29	1.7758	2.0464	2.3566	2.7119	3.1187	3.5840	4.1161	5.4184	7.1143
30	1.8114	2.0976	2.4273	2.8068	3.2434	3.7453	4.3219	5.7435	7.6123
31	1.8476	2.1500	2.5001	2.9050	3.3731	3.9139	4.5380	6.0881	8.1451
32	1.8845	2.2038	2.5751	3.0067	3.5081	4.0900	4.7649	6.4534	8.7153
33	1.9222	2.2589	2.6523	3.1119	3.6484	4.2740	5.0032	6.8406	9.3253
34	1.9607	2.3153	2.7319	3.2209	3.7943	4.4664	5.2533	7.2510	9.9781
35	1.9999	2.3732	2.8139	3.3336	3.9461	4.6673	5.5160	7.6861	10.6766
36	2.0399	2.4325	2.8983	3.4503	4.1039	4.8774	5.7918	8.1473	11.4239
37	2.0807	2.4933	2.9852	3.5710	4.2681	5.0969	6.0814	8.6361	12.2236
38	2.1223	2.5557	3.0748	3.6960	4.4388	5.3262	6.3855	9.1543	13.0793
39	2.1647	2.6196	3.1670	3.8254	4.6164	5.5659	6.7048	9.7035	13.9948
40	2.2080	2.6851	3.2620	3.9593	4.8010	5.8164	7.0400	10.2857	14.9745
41	2.2522	2.7522	3.3599	4.0978	4.9931	6.0781	7.3920	10.9029	16.0227
42	2.2972	2.8210	3.4607	4.2413	5.1928	6.3516	7.7616	11.5570	17.1443
43	2.3432	2.8915	3.5645	4.3897	5.4005	6.6374	8.1497	12.2505	18.3444
44	2.3901	2.9638	3.6715	4.5433	5.6165	6.9361	8.5572	12.9855	19.6285
45	2.4379	3.0379	3.7816	4.7024	5.8412	7.2482	8.9850	13.7636	21.0025
46	2.4866	3.1139	3.8950	4.8669	6.0748	7.5744	9.4343	14.5905	22.4726
47	2.5363	3.1917	4.0119	5.0373	6.3178	7.9153	9.9060	15.4659	24.0457
48	2.5871	3.2715	4.1323	5.2136	6.5705	8.2715	10.4013	16.3939	25.7289
49	2.6388	3.3533	4.2562	5.3961	6.8333	8.6437	10.9213	17.3775	27.5299
50	2.6916	3.4371	4.3839	5.5849	7.1067	9.0326	11.4674	18.4202	29.4570

PRESENT VALUE OF ONE DOLLAR DUE AT THE END OF n YEARS

n	2 %	2½ %	3 %	3½ %	4 %	4½ %	5 %	6 %	7 %
1	.98039	.97561	.97087	.96618	.96154	.95694	.95238	.94340	.93458
2	.96117	.95181	.94260	.93351	.92456	.91573	.90703	.89000	.87344
3	.94232	.92860	.91514	.90194	.88900	.87630	.86384	.83962	.81630
4	.92385	.90595	.88849	.87144	.85480	.83856	.82270	.79209	.76290
5	.90573	.88385	.86261	.84197	.82193	.80245	.78353	.74726	.71299
6	.88797	.86230	.83748	.81350	.79031	.76790	.74622	.70496	.66634
7	.87056	.84127	.81309	.78599	.75992	.73483	.71068	.66506	.62275
8	.85349	.82075	.78941	.75941	.73069	.70319	.67684	.62741	.58201
9	.83676	.80073	.76642	.73373	.70259	.67290	.64461	.59190	.54393
10	.82035	.78120	.74409	.70892	.67556	.64393	.61391	.55839	.50835
11	.80426	.76214	.72242	.68495	.64958	.61620	.58468	.52679	.47509
12	.78849	.74356	.70138	.66178	.62460	.58966	.55684	.49697	.44401
13	.77303	.72542	.68095	.63940	.60057	.56427	.53032	.46884	.41496
14	.75788	.70773	.66112	.61778	.57748	.53997	.50507	.44230	.38782
15	.74301	.69047	.64186	.59689	.55526	.51672	.48102	.41727	.36245
16	.72845	.67362	.62317	.57671	.53391	.49447	.45811	.39365	.33873
17	.71416	.65720	.60502	.55720	.51337	.47318	.43630	.37136	.31657
18	.70016	.64117	.58739	.53836	.49363	.45280	.41552	.35034	.29586
19	.68643	.62553	.57029	.52016	.47464	.43330	.39573	.33051	.27651
20	.67297	.61027	.55368	.50257	.45639	.41464	.37689	.31180	.25842
21	.65978	.59539	.53755	.48557	.43883	.39679	.35894	.29416	.24151
22	.64684	.58086	.52189	.46915	.42196	.37970	.34185	.27751	.22571
23	.63416	.56670	.50669	.45329	.40573	.36335	.32557	.26180	.21095
24	.62172	.55288	.49193	.43796	.39012	.34770	.31007	.24698	.19715
25	.60953	.53939	.47761	.42315	.37512	.33273	.29530	.23300	.18425
26	.59758	.52623	.46369	.40884	.36069	.31840	.28124	.21981	.17220
27	.58586	.51340	.45019	.39501	.34682	.30469	.26785	.20737	.16093
28	.57437	.50088	.43708	.38165	.33348	.29157	.25509	.19563	.15040
29	.56311	.48866	.42435	.36875	.32065	.27902	.24295	.18456	.14056
30	.55207	.47674	.41199	.35628	.30832	.26700	.23138	.17411	.13137
31	.54125	.46511	.39999	.34423	.29646	.25550	.22036	.16425	.12277
32	.53063	.45377	.38834	.33259	.28506	.24450	.20987	.15196	.11474
33	.52023	.44270	.37703	.32134	.27409	.23397	.19987	.14619	.10723
34	.51003	.43191	.36604	.31048	.26355	.22390	.19035	.13791	.10022
35	.50003	.42137	.35538	.29998	.25342	.21425	.18129	.13011	.09366
36	.49022	.41109	.34503	.28983	.24367	.20503	.17266	.12274	.08754
37	.48061	.40107	.33498	.28003	.23430	.19620	.16444	.11580	.08181
38	.47119	.39128	.32523	.27056	.22529	.18775	.15661	.10924	.07646
39	.46195	.38174	.31575	.26141	.21662	.17967	.14915	.10306	.07146
40	.45289	.37243	.30656	.25257	.20829	.17193	.14205	.09722	.06678
41	.44401	.36335	.29763	.24403	.20028	.16453	.13528	.09172	.06241
42	.43530	.35448	.28896	.23578	.19257	.15744	.12884	.08653	.05833
43	.42677	.34584	.28054	.22781	.18517	.15066	.12270	.08163	.05451
44	.41840	.33740	.27237	.22010	.17805	.14417	.11686	.07701	.05095
45	.41020	.32917	.26444	.21266	.17120	.13796	.11130	.07265	.04761
46	.40215	.32115	.25674	.20547	.16461	.13202	.10600	.06854	.04450
47	.39427	.31331	.24926	.19852	.15828	.12634	.10095	.06466	.04159
48	.38654	.30567	.24200	.19181	.15219	.12090	.09614	.06100	.03887
49	.37896	.29822	.23495	.18532	.14634	.11569	.09156	.05755	.03632
50	.37153	.29094	.22811	.17905	.14071	.11071	.08720	.05429	.03395

Table XIIc—Amount of an Annuity

AMOUNT OF AN ANNUITY OF ONE DOLLAR PER YEAR AFTER n YEARS

n	2 %	2½ %	3 %	3½ %	4 %	4½ %	5 %	6 %	7 %
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0200	2.0250	2.0300	2.0350	2.0400	2.0450	2.0500	2.0600	2.0700
3	3.0604	3.0756	3.0909	3.1062	3.1216	3.1370	3.1525	3.1836	3.2149
4	4.1216	4.1525	4.1836	4.2149	4.2465	4.2782	4.3101	4.3746	4.4399
5	5.2040	5.2563	5.3091	5.3625	5.4163	5.4707	5.5256	5.6371	5.7507
6	6.3081	6.3877	6.4684	6.5502	6.6330	6.7169	6.8019	6.9753	7.1533
7	7.4343	7.5474	7.6625	7.7794	7.8983	8.0192	8.1420	8.3938	8.6540
8	8.5830	8.7361	8.8923	9.0517	9.2142	9.3800	9.5491	9.8975	10.2598
9	9.7546	9.9545	10.1591	10.3685	10.5828	10.8021	11.0266	11.4913	11.9780
10	10.9497	11.2034	11.4639	11.7314	12.0061	12.2882	12.5779	13.1808	13.8164
11	12.1687	12.4835	12.8078	13.1420	13.4864	13.8412	14.2068	14.9716	15.7836
12	13.4121	13.7956	14.1920	14.6020	15.0258	15.4640	15.9171	16.8699	17.8885
13	14.6803	15.1404	15.6178	16.1130	16.6268	17.1599	17.7130	18.8821	20.1406
14	15.9739	16.5190	17.0863	17.6770	18.2919	18.9321	19.5986	21.0151	22.5505
15	17.2934	17.9319	18.5989	19.2957	20.0236	20.7841	21.5786	23.2760	25.1290
16	18.6393	19.3802	20.1569	20.9710	21.8245	22.7193	23.6575	25.6725	27.8881
17	20.0121	20.8647	21.7616	22.7050	23.6975	24.7417	25.8404	28.2129	30.8402
18	21.4123	22.3863	23.4144	24.4997	25.6454	26.8531	28.1324	30.9057	33.9990
19	22.8406	23.9460	25.1169	26.3572	27.6712	29.0636	30.5390	33.7600	37.3790
20	24.2974	25.5447	26.8704	28.2797	29.7781	31.3714	33.0660	36.7856	40.9955
21	25.7833	27.1833	28.6765	30.2695	31.9692	33.7831	35.7193	39.9927	44.8652
22	27.2990	28.8629	30.5368	32.3289	34.2480	36.3034	38.5052	43.3923	49.0057
23	28.8450	30.5844	32.4529	34.4604	36.6179	38.9370	41.4305	46.9958	53.4361
24	30.4219	32.3490	34.4265	36.6665	39.0826	41.6892	44.5020	50.8156	58.1767
25	32.0303	34.1578	36.4593	38.9499	41.6459	44.5652	47.7271	54.8645	63.2490
26	33.6709	36.0117	38.5530	41.3131	44.3117	47.5706	51.1135	59.1561	68.6765
27	35.3443	37.9120	40.7096	43.7591	47.0842	50.7113	54.6691	63.7058	74.4838
28	37.0512	39.8598	42.9309	46.2906	49.9676	53.9933	58.4026	68.5281	80.6977
29	38.7922	41.8563	45.2189	48.9108	52.9663	57.4230	62.3227	73.6398	87.3465
30	40.5681	43.9027	47.5754	51.6227	56.0849	61.0071	66.4388	79.0582	94.4608
31	42.3794	46.0003	50.0027	54.4295	59.3283	64.7524	70.7608	84.8017	102.0730
32	44.2270	48.1503	52.5028	57.3345	62.7015	68.6662	75.2988	90.8898	110.2182
33	46.1116	50.3540	55.0778	60.3412	66.2095	72.7562	80.0638	97.3432	118.9334
34	48.0338	52.6129	57.7302	63.4532	69.8579	77.0303	85.0670	104.1838	128.2588
35	49.9945	54.9282	60.4621	66.6740	73.6522	81.4966	90.3203	111.4348	138.2369
36	51.9944	57.3014	63.2759	70.0076	77.5983	86.1640	95.8363	119.1209	148.9135
37	54.0343	59.7339	66.1742	73.4579	81.7022	91.0413	101.6281	127.2681	160.3374
38	56.1149	62.2273	69.1594	77.0289	85.9703	96.1382	107.7095	135.9042	172.5610
39	58.2372	64.7830	72.2342	80.7249	90.4091	101.4644	114.0950	145.0585	185.6403
40	60.4020	67.4026	75.4013	84.5503	95.0255	107.0303	120.7998	154.7620	199.6351
41	62.6100	70.0876	78.6633	88.5095	99.8265	112.8467	127.8398	165.0477	214.6096
42	64.8622	72.8398	82.0232	92.6074	104.8196	118.9248	135.2318	175.9505	230.6322
43	67.1595	75.6608	85.4839	96.8486	110.0124	125.2764	142.9933	187.5076	247.7765
44	69.5027	78.5523	89.0484	101.2383	115.4129	131.9138	151.1430	199.7580	266.1209
45	71.8927	81.5161	92.7199	105.7817	121.0294	138.8500	159.7002	212.7435	285.7493
46	74.3306	84.5540	96.5015	110.4840	126.8706	146.0982	168.6852	226.5081	306.7518
47	76.8172	87.6679	100.3965	115.3510	132.9454	153.6726	178.1194	241.0986	329.2244
48	79.3535	90.8596	104.4084	120.3883	139.2632	161.5879	188.0254	256.5645	353.2701
49	81.9406	94.1311	108.5406	125.6018	145.8337	169.8594	198.4267	272.9584	378.9990
50	84.5794	97.4843	112.7969	130.9979	152.6671	178.5030	209.3480	290.3359	406.5289

Table XII d—Present Value of an Annuity

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PRESENT VALUE OF ONE DOLLAR PER YEAR FOR n YEARS

n	2 %	2½ %	3 %	3½ %	4 %	4½ %	5 %	6 %	7 %
1	.9804	.9756	.9709	.9662	.9615	.9569	.9524	.9434	.9346
2	1.9416	1.9274	1.9135	1.8997	1.8861	1.8727	1.8594	1.8334	1.8080
3	2.8839	2.8560	2.8286	2.8016	2.7751	2.7490	2.7232	2.6730	2.6243
4	3.8077	3.7620	3.7171	3.6731	3.6299	3.5875	3.5460	3.4651	3.3872
5	4.7135	4.6458	4.5797	4.5151	4.4518	4.3900	4.3295	4.2124	4.1002
6	5.6014	5.5081	5.4172	5.3286	5.2421	5.1579	5.0757	4.9173	4.7665
7	6.4720	6.3494	6.2303	6.1145	6.0021	5.8927	5.7864	5.5824	5.3893
8	7.3255	7.1701	7.0197	6.8740	6.7327	6.5959	6.4632	6.2098	5.9713
9	8.1622	7.9709	7.7861	7.6077	7.4353	7.2688	7.1078	6.8017	6.5152
10	8.9826	8.7521	8.5302	8.3166	8.1109	7.9127	7.7217	7.3601	7.0236
11	9.7868	9.5142	9.2526	9.0016	8.7605	8.5289	8.3064	7.8869	7.4987
12	10.5753	10.2578	9.9540	9.6633	9.3851	9.1186	8.8633	8.3838	7.9427
13	11.3484	10.9832	10.6350	10.3027	9.9856	9.6829	9.3936	8.8527	8.3577
14	12.1062	11.6909	11.2961	10.9205	10.5631	10.2228	9.8986	9.2950	8.7455
15	12.8493	12.3814	11.9379	11.5174	11.1184	10.7395	10.3797	9.7122	9.1079
16	13.5777	13.0550	12.5611	12.0941	11.6523	11.2340	10.8378	10.1059	9.4466
17	14.2919	13.7122	13.1661	12.6513	12.1657	11.7072	11.2741	10.4773	9.7632
18	14.9920	14.3534	13.7535	13.1897	12.6593	12.1600	11.6896	10.8276	10.0591
19	15.6785	14.9789	14.3238	13.7098	13.1339	12.5933	12.0853	11.1581	10.3356
20	16.3514	15.5892	14.8775	14.2124	13.5903	13.0079	12.4622	11.4699	10.5940
21	17.0112	16.1845	15.4150	14.6980	14.0292	13.4047	12.8212	11.7641	10.8355
22	17.6580	16.7654	15.9369	15.1671	14.4511	13.7844	13.1630	12.0416	11.0612
23	18.2922	17.3321	16.4436	15.6204	14.8568	14.1478	13.4886	12.3034	11.2722
24	18.9139	17.8850	16.9355	16.0584	15.2470	14.4955	13.7986	12.5504	11.4693
25	19.5235	18.4244	17.4131	16.4815	15.6221	14.8282	14.0939	12.7834	11.6536
26	20.1210	18.9506	17.8768	16.8904	15.9828	15.1466	14.3752	13.0032	11.8258
27	20.7069	19.4640	18.3270	17.2854	16.3296	15.4513	14.6430	13.2105	11.9867
28	21.2813	19.9649	18.7641	17.6670	16.6631	15.7429	14.8981	13.4062	12.1371
29	21.8444	20.4535	19.1885	18.0358	16.9837	16.0219	15.1411	13.5907	12.2777
30	22.3965	20.9303	19.6004	18.3920	17.2920	16.2889	15.3725	13.7648	12.4090
31	22.9377	21.3954	20.0004	18.7363	17.5885	16.5444	15.5928	13.9291	12.5318
32	23.4683	21.8492	20.3888	19.0689	17.8736	16.7889	15.8027	14.0840	12.6466
33	23.9886	22.2919	20.7658	19.3902	18.1476	17.0229	16.0025	14.2302	12.7538
34	24.4986	22.7238	21.1318	19.7007	18.4112	17.2468	16.1929	14.3681	12.8540
35	24.9986	23.1452	21.4872	20.0007	18.6646	17.4610	16.3742	14.4982	12.9477
36	25.4888	23.5563	21.8323	20.2905	18.9083	17.6660	16.5469	14.6210	13.0352
37	25.9695	23.9573	22.1672	20.5705	19.1426	17.8622	16.7113	14.7368	13.1170
38	26.4406	24.3486	22.4925	20.8411	19.3679	18.0500	16.8679	14.8460	13.1935
39	26.9026	24.7303	22.8082	21.1025	19.5845	18.2297	17.0170	14.9491	13.2649
40	27.3555	25.1028	23.1148	21.3551	19.7928	18.4016	17.1591	15.0463	13.3317
41	27.7995	25.4661	23.4124	21.5991	19.9931	18.5661	17.2944	15.1380	13.3941
42	28.2348	25.8206	23.7014	21.8349	20.1856	18.7236	17.4232	15.2245	13.4524
43	28.6616	26.1664	23.9819	22.0627	20.3708	18.8742	17.5459	15.3062	13.5070
44	29.0800	26.5038	24.2543	22.2828	20.5488	19.0184	17.6628	15.3832	13.5579
45	29.4902	26.8330	24.5187	22.4955	20.7200	19.1563	17.7741	15.4558	13.6055
46	29.8923	27.1542	24.7754	22.7009	20.8847	19.2884	17.8801	15.5244	13.6500
47	30.2866	27.4675	25.0247	22.8994	21.0429	19.4147	17.9810	15.5890	13.6919
48	30.6731	27.7732	25.2667	23.0912	21.1951	19.5356	18.0772	15.6500	13.7305
49	31.0521	28.0714	25.5017	23.2766	21.3415	19.6513	18.1687	15.7076	13.7668
50	31.4236	28.3623	25.7298	23.4556	21.4822	19.7620	18.2559	15.7619	13.8007

<i>r</i>	$1 + r$	$\log (1 + r)$	<i>r</i>	$1 + r$	$\log (1 + r)$
$\frac{1}{2}\%$	1.005	00216 60617 56508	$5\frac{1}{2}\%$	1.055	02325 24596 33711
1%	1.010	00432 13737 82643	6%	1.060	02530 58652 64770
$1\frac{1}{2}\%$	1.015	00646 60422 49232	$6\frac{1}{2}\%$	1.065	02734 96077 74757
2%	1.020	00860 01717 61918	7%	1.070	02938 37776 85210
$2\frac{1}{2}\%$	1.025	01072 38653 91773	$7\frac{1}{2}\%$	1.075	03140 84642 51624
3%	1.030	01283 72247 05172	8%	1.080	03342 37554 86950
$3\frac{1}{2}\%$	1.035	01494 03497 92937	$8\frac{1}{2}\%$	1.085	03542 97381 84548
4%	1.040	01703 33392 98780	9%	1.090	03742 64979 40624
$4\frac{1}{2}\%$	1.045	01911 62904 47073	$9\frac{1}{2}\%$	1.095	03941 41191 76137
5%	1.050	02118 92990 69938	10%	1.100	04139 26851 58225

For Amount, A , of any principal, P , after n years: $A = P (1 + r)^n$

For present worth, P , of any amount, A , at the end of n years: $P = A \div (1 + r)^n$

To find logarithms and antilogarithms of A and P to many significant figures, use Table XI, p. 126, and Table I *a*, p. 20.

TABLE XII *f*—AMERICAN EXPERIENCE MORTALITY TABLE

Based on 100,000 living at age 10

At Age	Number Surviving	Deaths	At Age	Number Surviving	Deaths	At Age	Number Surviving	Deaths	At Age	Number Surviving	Deaths
10	100,000	749	35	81,822	732	60	57,917	1,546	85	5,485	1,292
11	99,251	746	36	81,090	737	61	56,371	1,628	86	4,193	1,114
12	98,505	743	37	80,353	742	62	54,743	1,713	87	3,079	933
13	97,762	740	38	79,611	749	63	53,030	1,800	88	2,146	744
14	97,022	737	39	78,862	756	64	51,230	1,889	89	1,402	555
15	96,285	735	40	78,106	765	65	49,341	1,980	90	847	385
16	95,550	732	41	77,341	774	66	47,361	2,070	91	462	246
17	94,818	729	42	76,567	785	67	45,291	2,158	92	216	137
18	94,089	727	43	75,782	797	68	43,133	2,243	93	79	58
19	93,362	725	44	74,985	812	69	40,890	2,321	94	21	18
20	92,637	723	45	74,173	828	70	38,569	2,391	95	3	3
21	91,914	722	46	73,345	848	71	36,178	2,448			
22	91,192	721	47	72,497	870	72	33,730	2,487			
23	90,471	720	48	71,627	896	73	31,243	2,505			
24	89,751	719	49	70,731	927	74	28,738	2,501			
25	89,032	718	50	69,804	962	75	26,237	2,476			
26	88,314	718	51	68,842	1,001	76	23,761	2,431			
27	87,596	718	52	67,841	1,044	77	21,330	2,369			
28	86,878	718	53	66,797	1,091	78	18,961	2,291			
29	86,160	719	54	65,706	1,143	79	16,670	2,196			
30	85,441	720	55	64,563	1,199	80	14,474	2,091			
31	84,721	721	56	63,364	1,260	81	12,383	1,964			
32	84,000	723	57	62,104	1,325	82	10,419	1,816			
33	83,277	726	58	60,779	1,394	83	8,603	1,648			
34	82,551	729	59	59,385	1,468	84	6,955	1,470			

LOGARITHMS OF IMPORTANT CONSTANTS

n = NUMBER	VALUE OF n	$\text{LOG}_{10} n$
π	3.14159265	0.49714987
$1 \div \pi$	0.31830989	9.50285013
π^2	9.86960440	0.99429975
$\sqrt{\pi}$	1.77245385	0.24857494
e = Napierian Base	2.71828183	0.43429448
$M = \log_{10} e$	0.43429448	9.63778431
$1 \div M = \log_e 10$	2.30258509	0.36221569
$180 \div \pi$ = degrees in 1 radian	57.2957795	1 75812263
$\pi \div 180$ = radians in 1°	0.01745329	8.24187737
$\pi \div 10800$ = radians in 1'	0.0002908882	6.46372612
$\pi \div 648000$ = radians in 1''	0.000004848136811095	4.68557487
$\sin 1''$	0.000004848136811076	4.68557487
$\tan 1''$	0.000004848136811133	4.68557487
centimeters in 1 ft.	30.480	1.4840158
feet in 1 cm.	0.032808	8.5159842
inches in 1 m.	39.37 (exact legal value)	1.5951654
pounds in 1 kg.	2.20462	0.3433340
kilograms in 1 lb.	0.453593	9.6566660
g (average value)	32.16 ft./sec./sec. = 981 cm./sec./sec.	1.5073 2.9916690
weight of 1 cu. ft. of water	62.425 lb. (max. density)	1.7953586
weight of 1 cu. ft. of air	0.0807 lb. (at 32° F.)	8.907
cu. in. in 1 (U. S.) gallon	231 (exact legal value)	2.3636120
ft. lb. per sec. in 1 H. P.	550 (exact legal value)	2.7403627
kg. m. per sec. in 1 H. P.	76.0404	1.8810445
watts in 1 H. P.	745.957	2.8727135

SEVERAL NUMBERS VERY ACCURATELY

$\pi = 3.14159$	26535	89793	23846	26433	83280
$e = 2.71828$	18284	59045	23536	02874	71353
$M = 0.43429$	44819	03251	82765	11289	18917
$1 \div M = 2.30258$	50929	94045	68401	79914	54684
$\log_{10} \pi = 0.49714$	98726	94133	85435	12682	88291
$\log_{10} M = 9.63778$	43113	00536	78912		

CERTAIN CONVENIENT VALUES FOR $n = 1$ TO $n = 10$

n	$1/n$	$\sqrt{n}$	$\sqrt[3]{n}$	$n!$	$1/n!$	$\text{LOG}_{10} n$
1	1.000000	1.00000	1.00000	1	1.0000000	0.000000000
2	0.500000	1.41421	1.25992	2	0.5000000	0.301029996
3	0.333333	1.73205	1.44225	6	0.1666667	0.477121255
4	0.250000	2.00000	1.58740	24	0.0416667	0.602059991
5	0.200000	2.23607	1.70998	120	0.0083333	0.698970004
6	0.166667	2.44949	1.81712	720	0.0013889	0.778151250
7	0.142857	2.64575	1.91293	5040	0.0001984	0.845098040
8	0.125000	2.82843	2.00000	40320	0.0000248	0.903089987
9	0.111111	3.00000	2.08008	362880	0.0000028	0.954242509
10	0.100000	3.16228	2.15443	3628800	0.0000003	1.000000000

N	0	1	2	3	4	5	6	7	8	9	1 2 3	4 5 6	7 8 9
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0374	4 8 12	17 21 25	29 33 37
11	0414	0453	0492	0531	0569	0607	0645	0682	0719	0755	4 8 11	15 19 23	26 30 34
12	0792	0828	0864	0899	0934	0969	1004	1038	1072	1106	3 7 10	14 17 21	24 28 31
13	1139	1173	1206	1239	1271	1303	1335	1367	1399	1430	3 6 10	13 16 19	23 26 29
14	1461	1492	1523	1553	1584	1614	1644	1673	1703	1732	3 6 9	12 15 18	21 24 27
15	1761	1790	1818	1847	1875	1903	1931	1959	1987	2014	3 6 8	11 14 17	20 22 25
16	2041	2068	2095	2122	2148	2175	2201	2227	2253	2279	3 5 8	11 13 16	18 21 24
17	2304	2330	2355	2380	2405	2430	2455	2480	2504	2529	2 5 7	10 12 15	17 20 22
18	2553	2577	2601	2625	2648	2672	2695	2718	2742	2765	2 5 7	9 12 14	16 19 21
19	2788	2810	2833	2856	2878	2900	2923	2945	2967	2989	2 4 7	9 11 13	16 18 20
20	3010	3032	3054	3075	3096	3118	3139	3160	3181	3201	2 4 6	8 11 13	15 17 19
21	3222	3243	3263	3284	3304	3324	3345	3365	3385	3404	2 4 6	8 10 12	14 16 18
22	3424	3444	3464	3483	3502	3522	3541	3560	3579	3598	2 4 6	8 10 12	14 16 17
23	3617	3636	3655	3674	3692	3711	3729	3747	3766	3784	2 4 6	7 9 11	13 15 17
24	3802	3820	3838	3856	3874	3892	3909	3927	3945	3962	2 4 5	7 9 11	12 14 16
25	3979	3997	4014	4031	4048	4065	4082	4099	4116	4133	2 4 5	7 9 10	12 14 16
26	4150	4166	4183	4200	4216	4232	4249	4265	4281	4298	2 3 5	7 8 10	11 13 15
27	4314	4330	4346	4362	4378	4393	4409	4425	4440	4456	2 3 5	6 8 9	11 12 14
28	4472	4487	4502	4518	4533	4548	4564	4579	4594	4609	2 3 5	6 8 9	11 12 14
29	4624	4639	4654	4669	4683	4698	4713	4728	4742	4757	1 3 4	6 7 9	10 12 13
30	4771	4786	4800	4814	4829	4843	4857	4871	4886	4900	1 3 4	6 7 9	10 11 13
31	4914	4928	4942	4955	4969	4983	4997	5011	5024	5038	1 3 4	5 7 8	10 11 12
32	5051	5065	5079	5092	5105	5119	5132	5145	5159	5172	1 3 4	5 7 8	9 11 12
33	5185	5198	5211	5224	5237	5250	5263	5276	5289	5302	1 3 4	5 7 8	9 11 12
34	5315	5328	5340	5353	5366	5378	5391	5403	5416	5428	1 2 4	5 6 8	9 10 11
35	5441	5453	5465	5478	5490	5502	5514	5527	5539	5551	1 2 4	5 6 7	9 10 11
36	5563	5575	5587	5599	5611	5623	5635	5647	5658	5670	1 2 4	5 6 7	8 10 11
37	5682	5694	5705	5717	5729	5740	5752	5763	5775	5786	1 2 4	5 6 7	8 9 11
38	5798	5809	5821	5832	5843	5855	5866	5877	5888	5899	1 2 3	5 6 7	8 9 10
39	5911	5922	5933	5944	5955	5966	5977	5988	5999	6010	1 2 3	4 5 7	8 9 10
40	6021	6031	6042	6053	6064	6075	6085	6096	6107	6117	1 2 3	4 5 6	8 9 10
41	6128	6138	6149	6160	6170	6180	6191	6201	6212	6222	1 2 3	4 5 6	7 8 9
42	6232	6243	6253	6263	6274	6284	6294	6304	6314	6325	1 2 3	4 5 6	7 8 9
43	6335	6345	6355	6365	6375	6385	6395	6405	6415	6425	1 2 3	4 5 6	7 8 9
44	6435	6444	6454	6464	6474	6484	6493	6503	6513	6522	1 2 3	4 5 6	7 8 9
45	6532	6542	6551	6561	6571	6580	6590	6599	6609	6618	1 2 3	4 5 6	7 8 9
46	6628	6637	6646	6656	6665	6675	6684	6693	6702	6712	1 2 3	4 5 6	7 7 8
47	6721	6730	6739	6749	6758	6767	6776	6785	6794	6803	1 2 3	4 5 6	7 7 8
48	6812	6821	6830	6839	6848	6857	6866	6875	6884	6893	1 2 3	4 5 6	7 7 8
49	6902	6911	6920	6928	6937	6946	6955	6964	6972	6981	1 2 3	4 4 5	6 7 8
50	6990	6998	7007	7016	7024	7033	7042	7050	7059	7067	1 2 3	3 4 5	6 7 8
51	7076	7084	7093	7101	7110	7118	7126	7135	7143	7152	1 2 3	3 4 5	6 7 8
52	7160	7168	7177	7185	7193	7202	7210	7218	7226	7235	1 2 3	3 4 5	6 7 7
53	7243	7251	7259	7267	7275	7284	7292	7300	7308	7316	1 2 2	3 4 5	6 6 7
54	7324	7332	7340	7348	7356	7364	7372	7380	7388	7396	1 2 2	3 4 5	6 6 7
N	0	1	2	3	4	5	6	7	8	9	1 2 2	4 5 6	7 8 9

The proportional parts are stated in full for every tenth at the right-hand side. The logarithm of any number of four significant figures can be read directly by add-

N	0	1	2	3	4	5	6	7	8	9	1 2 3	4 5 6	7 8 9
55	7404	7412	7419	7427	7435	7443	7451	7459	7466	7474	1 2 2	3 4 5	5 6 7
56	7482	7490	7497	7505	7513	7520	7528	7536	7543	7551	1 2 2	3 4 5	5 6 7
57	7559	7566	7574	7582	7589	7597	7604	7612	7619	7627	1 1 2	3 4 5	5 6 7
58	7634	7642	7649	7657	7664	7672	7679	7686	7694	7701	1 1 2	3 4 4	5 6 7
59	7709	7716	7723	7731	7738	7745	7752	7760	7767	7774	1 1 2	3 4 4	5 6 7
60	7782	7789	7796	7803	7810	7818	7825	7832	7839	7846	1 1 2	3 4 4	5 6 6
61	7853	7860	7868	7875	7882	7889	7896	7903	7910	7917	1 1 2	3 3 4	5 6 6
62	7924	7931	7938	7945	7952	7959	7966	7973	7980	7987	1 1 2	3 3 4	5 5 6
63	7993	8000	8007	8014	8021	8028	8035	8041	8048	8055	1 1 2	3 3 4	5 5 6
64	8062	8069	8075	8082	8089	8096	8102	8109	8116	8122	1 1 2	3 3 4	5 5 6
65	8129	8136	8142	8149	8156	8162	8169	8176	8182	8189	1 1 2	3 3 4	5 5 6
66	8195	8202	8209	8215	8222	8228	8235	8241	8248	8254	1 1 2	3 3 4	5 5 6
67	8261	8267	8274	8280	8287	8293	8299	8306	8312	8319	1 1 2	3 3 4	5 5 6
68	8325	8331	8338	8344	8351	8357	8363	8370	8376	8382	1 1 2	3 3 4	4 5 6
69	8388	8395	8401	8407	8414	8420	8426	8432	8439	8445	1 1 2	3 3 4	4 5 6
70	8451	8457	8463	8470	8476	8482	8488	8494	8500	8506	1 1 2	3 3 4	4 5 6
71	8513	8519	8525	8531	8537	8543	8549	8555	8561	8567	1 1 2	3 3 4	4 5 6
72	8573	8579	8585	8591	8597	8603	8609	8615	8621	8627	1 1 2	3 3 4	4 5 6
73	8633	8639	8645	8651	8657	8663	8669	8675	8681	8686	1 1 2	2 3 4	4 5 5
74	8692	8698	8704	8710	8716	8722	8727	8733	8739	8745	1 1 2	2 3 4	4 5 5
75	8751	8756	8762	8768	8774	8779	8785	8791	8797	8802	1 1 2	2 3 3	4 5 5
76	8808	8814	8820	8825	8831	8837	8842	8848	8854	8859	1 1 2	2 3 3	4 4 5
77	8865	8871	8876	8882	8887	8893	8899	8904	8910	8915	1 1 2	2 3 3	4 4 5
78	8921	8927	8932	8938	8943	8949	8954	8960	8965	8971	1 1 2	2 3 3	4 4 5
79	8976	8982	8987	8993	8998	9004	9009	9015	9020	9025	1 1 2	2 3 3	4 4 5
80	9031	9036	9042	9047	9053	9058	9063	9069	9074	9079	1 1 2	2 3 3	4 4 5
81	9085	9090	9096	9101	9106	9112	9117	9122	9128	9133	1 1 2	2 3 3	4 4 5
82	9138	9143	9149	9154	9159	9165	9170	9175	9180	9186	1 1 2	2 3 3	4 4 5
83	9191	9196	9201	9206	9212	9217	9222	9227	9232	9238	1 1 2	2 3 3	4 4 5
84	9243	9248	9253	9258	9263	9269	9274	9279	9284	9289	1 1 2	2 3 3	4 4 5
85	9294	9299	9304	9309	9315	9320	9325	9330	9335	9340	1 1 2	2 3 3	4 4 5
86	9345	9350	9355	9360	9365	9370	9375	9380	9385	9390	1 1 2	2 3 3	4 4 5
87	9395	9400	9405	9410	9415	9420	9425	9430	9435	9440	1 1 2	2 3 3	4 4 5
88	9445	9450	9455	9460	9465	9469	9474	9479	9484	9489	0 1 1	2 2 3	3 4 4
89	9494	9499	9504	9509	9513	9518	9523	9528	9533	9538	0 1 1	2 2 3	3 4 4
90	9542	9547	9552	9557	9562	9566	9571	9576	9581	9586	0 1 1	2 2 3	3 4 4
91	9590	9595	9600	9605	9609	9614	9619	9624	9628	9633	0 1 1	2 2 3	3 4 4
92	9638	9643	9647	9652	9657	9661	9666	9671	9675	9680	0 1 1	2 2 3	3 4 4
93	9685	9689	9694	9699	9703	9708	9713	9717	9722	9727	0 1 1	2 2 3	3 4 4
94	9731	9736	9741	9745	9750	9754	9759	9763	9768	9773	0 1 1	2 2 3	3 4 4
95	9777	9782	9786	9791	9795	9800	9805	9809	9814	9818	0 1 1	2 2 3	3 4 4
96	9823	9827	9832	9836	9841	9845	9850	9854	9859	9863	0 1 1	2 2 3	3 4 4
97	9868	9872	9877	9881	9886	9890	9894	9899	9903	9908	0 1 1	2 2 3	3 4 4
98	9912	9917	9921	9926	9930	9934	9939	9943	9948	9952	0 1 1	2 2 3	3 3 4
99	9956	9961	9965	9969	9974	9978	9983	9987	9991	9996	0 1 1	2 2 3	3 3 4
N	0	1	2	3	4	5	6	7	8	9	1 2 3	4 5 6	7 8 9

ing the proportional part corresponding to the fourth figure to the tabular number corresponding to the first three figures. There may be an error of 1 in the last place.

	0	1	2	3	4	5	6	7	8	9	1 2 3	4 5 6	7 8 9
.00	1000	1002	1005	1007	1009	1012	1014	1016	1019	1021	0 0 1	1 1 1	2 2 2
.01	1023	1026	1028	1030	1033	1035	1038	1040	1042	1045	0 0 1	1 1 1	2 2 2
.02	1047	1050	1052	1054	1057	1059	1062	1064	1067	1069	0 0 1	1 1 1	2 2 2
.03	1072	1074	1076	1079	1081	1084	1086	1089	1091	1094	0 0 1	1 1 1	2 2 2
.04	1096	1099	1102	1104	1107	1109	1112	1114	1117	1119	0 1 1	1 1 2	2 2 2
.05	1122	1125	1127	1130	1132	1135	1138	1140	1143	1146	0 1 1	1 1 2	2 2 2
.06	1148	1151	1153	1156	1159	1161	1164	1167	1169	1172	0 1 1	1 1 2	2 2 2
.07	1175	1178	1180	1183	1186	1189	1191	1194	1197	1199	0 1 1	1 1 2	2 2 2
.08	1202	1205	1208	1211	1213	1216	1219	1222	1225	1227	0 1 1	1 1 2	2 2 3
.09	1230	1233	1236	1239	1242	1245	1247	1250	1253	1256	0 1 1	1 1 2	2 2 3
.10	1259	1262	1265	1268	1271	1274	1276	1279	1282	1285	0 1 1	1 1 2	2 2 3
.11	1288	1291	1294	1297	1300	1303	1306	1309	1312	1315	0 1 1	1 2 2	2 2 3
.12	1318	1321	1324	1327	1330	1334	1337	1340	1343	1346	0 1 1	1 2 2	2 2 3
.13	1349	1352	1355	1358	1361	1365	1368	1371	1374	1377	0 1 1	1 2 2	2 3 3
.14	1380	1384	1387	1390	1393	1396	1400	1403	1406	1409	0 1 1	1 2 2	2 3 3
.15	1413	1416	1419	1422	1426	1429	1432	1435	1439	1442	0 1 1	1 2 2	2 3 3
.16	1445	1449	1452	1455	1459	1462	1466	1469	1472	1476	0 1 1	1 2 2	2 3 3
.17	1479	1483	1486	1489	1493	1496	1500	1503	1507	1510	0 1 1	1 2 2	2 3 3
.18	1514	1517	1521	1524	1528	1531	1535	1538	1542	1545	0 1 1	1 2 2	2 3 3
.19	1549	1552	1556	1560	1563	1567	1570	1574	1578	1581	0 1 1	1 2 2	2 3 3
.20	1585	1589	1592	1596	1600	1603	1607	1611	1614	1618	0 1 1	1 2 2	3 3 3
.21	1622	1626	1629	1633	1637	1641	1644	1648	1652	1656	0 1 1	1 2 2	3 3 3
.22	1660	1663	1667	1671	1675	1679	1683	1687	1690	1694	0 1 1	2 2 2	3 3 3
.23	1698	1702	1706	1710	1714	1718	1722	1726	1730	1734	0 1 1	2 2 2	3 3 3
.24	1738	1742	1746	1750	1754	1758	1762	1766	1770	1774	0 1 1	2 2 2	3 3 4
.25	1778	1782	1786	1791	1795	1799	1803	1807	1811	1816	0 1 1	2 2 3	3 3 4
.26	1820	1824	1828	1832	1837	1841	1845	1849	1854	1858	0 1 1	2 2 3	3 3 4
.27	1862	1866	1871	1875	1879	1884	1888	1892	1897	1901	0 1 1	2 2 3	3 3 4
.28	1905	1910	1914	1919	1923	1928	1932	1936	1941	1945	0 1 1	2 2 3	3 4 4
.29	1950	1954	1959	1963	1968	1972	1977	1982	1986	1991	0 1 1	2 2 3	3 4 4
.30	1995	2000	2004	2009	2014	2018	2023	2028	2032	2037	0 1 1	2 2 3	3 4 4
.31	2042	2046	2051	2056	2061	2065	2070	2075	2080	2084	0 1 1	2 2 3	3 4 4
.32	2089	2094	2099	2104	2109	2113	2118	2123	2128	2133	0 1 1	2 2 3	3 4 4
.33	2138	2143	2148	2153	2158	2163	2168	2173	2178	2183	0 1 1	2 2 3	3 4 4
.34	2188	2193	2198	2203	2208	2213	2218	2223	2228	2234	1 1 2	2 3 3	4 4 5
.35	2239	2244	2249	2254	2259	2265	2270	2275	2280	2286	1 1 2	2 3 3	4 4 5
.36	2291	2296	2301	2307	2312	2317	2323	2328	2333	2339	1 1 2	2 3 3	4 4 5
.37	2344	2350	2355	2360	2366	2371	2377	2382	2388	2393	1 1 2	2 3 3	4 4 5
.38	2399	2404	2410	2415	2421	2427	2432	2438	2443	2449	1 1 2	2 3 3	4 5 5
.39	2455	2460	2466	2472	2477	2483	2489	2495	2500	2506	1 1 2	2 3 3	4 5 5
.40	2512	2518	2523	2529	2535	2541	2547	2553	2559	2564	1 1 2	2 3 4	4 5 5
.41	2570	2576	2582	2588	2594	2600	2606	2612	2618	2624	1 1 2	2 3 4	4 5 6
.42	2630	2636	2642	2649	2655	2661	2667	2673	2679	2685	1 1 2	2 3 4	4 5 6
.43	2692	2698	2704	2710	2716	2723	2729	2735	2742	2748	1 1 2	2 3 4	4 5 6
.44	2754	2761	2767	2773	2780	2786	2793	2799	2805	2812	1 1 2	3 3 4	4 5 6
.45	2818	2825	2831	2838	2844	2851	2858	2864	2871	2877	1 1 2	3 3 4	5 5 6
.46	2884	2891	2897	2904	2911	2917	2924	2931	2938	2944	1 1 2	3 3 4	5 5 6
.47	2951	2958	2965	2972	2979	2985	2992	2999	3006	3013	1 1 2	3 3 4	5 6 6
.48	3020	3027	3034	3041	3048	3055	3062	3069	3076	3083	1 1 2	3 3 4	5 6 6
.49	3090	3097	3105	3112	3119	3126	3133	3141	3148	3155	1 1 2	3 4 4	5 6 6

	0	1	2	3	4	5	6	7	8	9	1 2 3	4 5 6	7 8 9
.50	3162	3170	3177	3184	3192	3199	3206	3214	3221	3228	1 1 2	3 4 4	5 6 7
.51	3236	3243	3251	3258	3266	3273	3281	3289	3296	3304	1 1 2	3 4 4	5 6 7
.52	3311	3319	3327	3334	3342	3350	3357	3365	3373	3381	1 1 2	3 4 5	5 6 7
.53	3388	3396	3404	3412	3420	3428	3436	3443	3451	3459	1 2 2	3 4 5	6 6 7
.54	3467	3475	3483	3491	3499	3508	3516	3524	3532	3540	1 2 2	3 4 5	6 6 7
.55	3548	3556	3565	3573	3581	3589	3597	3606	3614	3622	1 2 2	3 4 5	6 7 7
.56	3631	3639	3648	3656	3664	3673	3681	3690	3698	3707	1 2 2	3 4 5	6 7 8
.57	3715	3724	3733	3741	3750	3758	3767	3776	3784	3793	1 2 3	3 4 5	6 7 8
.58	3802	3811	3819	3828	3837	3846	3855	3864	3873	3882	1 2 3	3 4 5	6 7 8
.59	3890	3899	3908	3917	3926	3936	3945	3954	3963	3972	1 2 3	4 5 5	6 7 8
.60	3981	3990	3999	4009	4018	4027	4036	4046	4055	4064	1 2 3	4 5 6	7 8 8
.61	4074	4083	4093	4102	4111	4121	4130	4140	4150	4159	1 2 3	4 5 6	7 8 9
.62	4169	4178	4188	4198	4207	4217	4227	4236	4246	4256	1 2 3	4 5 6	7 8 9
.63	4266	4276	4285	4295	4305	4315	4325	4335	4345	4355	1 2 3	4 5 6	7 8 9
.64	4365	4375	4385	4395	4406	4416	4426	4436	4446	4457	1 2 3	4 5 6	7 8 9
.65	4467	4477	4487	4498	4508	4519	4529	4539	4550	4560	1 2 3	4 5 6	7 8 9
.66	4571	4581	4592	4603	4613	4624	4634	4645	4656	4667	1 2 3	4 5 6	7 9 10
.67	4677	4688	4699	4710	4721	4732	4742	4753	4764	4775	1 2 3	4 5 7	8 9 10
.68	4786	4797	4808	4819	4831	4842	4853	4864	4875	4887	1 2 3	5 6 7	8 9 10
.69	4898	4909	4920	4932	4943	4955	4966	4977	4989	5000	1 2 3	5 6 7	8 9 10
.70	5012	5023	5035	5047	5058	5070	5082	5093	5105	5117	1 2 3	5 6 7	8 9 10
.71	5129	5140	5152	5164	5176	5188	5200	5212	5224	5236	1 2 4	5 6 7	8 10 11
.72	5248	5260	5272	5284	5297	5309	5321	5333	5346	5358	1 2 4	5 6 7	9 10 11
.73	5370	5383	5395	5408	5420	5433	5445	5458	5470	5483	1 3 4	5 6 7	9 10 11
.74	5495	5508	5521	5534	5546	5559	5572	5585	5598	5610	1 3 4	5 6 8	9 10 12
.75	5623	5636	5649	5662	5675	5689	5702	5715	5728	5741	1 3 4	5 7 8	9 11 12
.76	5754	5768	5781	5794	5808	5821	5834	5848	5861	5875	1 3 4	5 7 8	9 11 12
.77	5888	5902	5916	5929	5943	5957	5970	5984	5998	6012	1 3 4	5 7 8	10 11 12
.78	6026	6039	6053	6067	6081	6095	6109	6124	6138	6152	1 3 4	6 7 8	10 11 13
.79	6166	6180	6194	6209	6223	6237	6252	6266	6281	6295	1 3 4	6 7 9	10 11 13
.80	6310	6324	6339	6353	6368	6383	6397	6412	6427	6442	1 3 4	6 7 9	10 12 13
.81	6457	6471	6486	6501	6516	6531	6546	6561	6577	6592	2 3 5	6 8 9	11 12 14
.82	6607	6622	6637	6653	6668	6683	6699	6714	6730	6745	2 3 5	6 8 9	11 12 14
.83	6761	6776	6792	6808	6823	6839	6855	6871	6887	6902	2 3 5	6 8 9	11 13 14
.84	6918	6934	6950	6966	6982	6998	7015	7031	7047	7063	2 3 5	7 8 10	11 13 15
.85	7079	7096	7112	7129	7145	7161	7178	7194	7211	7228	2 3 5	7 8 10	12 13 15
.86	7244	7261	7278	7295	7311	7328	7345	7362	7379	7396	2 3 5	7 8 10	12 14 15
.87	7413	7430	7447	7464	7482	7499	7516	7534	7551	7568	2 4 5	7 9 10	12 14 16
.88	7586	7603	7621	7638	7656	7674	7691	7709	7727	7745	2 4 5	7 9 11	12 14 16
.89	7762	7780	7798	7816	7834	7852	7870	7889	7907	7925	2 4 6	7 9 11	13 15 16
.90	7943	7962	7980	7998	8017	8035	8054	8072	8091	8110	2 4 6	7 9 11	13 15 17
.91	8128	8147	8166	8185	8204	8222	8241	8260	8279	8299	2 4 6	8 9 11	13 15 17
.92	8318	8337	8356	8375	8395	8414	8433	8453	8472	8492	2 4 6	8 10 12	14 15 17
.93	8511	8531	8551	8570	8590	8610	8630	8650	8670	8690	2 4 6	8 10 12	14 16 18
.94	8710	8730	8750	8770	8790	8810	8831	8851	8872	8892	2 4 6	8 10 12	14 16 18
.95	8913	8933	8954	8974	8995	9016	9036	9057	9078	9099	2 4 6	8 10 12	15 17 19
.96	9120	9141	9162	9183	9204	9226	9247	9268	9290	9311	2 4 6	9 11 13	15 17 19
.97	9333	9354	9376	9397	9419	9441	9462	9484	9506	9528	2 4 6	9 11 13	15 17 19
.98	9550	9572	9594	9616	9638	9661	9683	9705	9727	9750	2 4 7	9 11 13	16 18 20
.99	9772	9795	9817	9840	9863	9886	9908	9931	9954	9977	2 5 7	9 11 14	16 18 21

138 Table XIV c—Four Place Trigonometric Functions [XIV

[Characteristics of Logarithms omitted—determine by the usual rule from the value]

RADIANs	DEGREEs	SINE		TANGENT		COTANGENT		COSINE			
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀		
.0000	0° 00'	.0000	—	.0000	—	—	—	1.0000	.0000	90° 00'	1.5708
.0029	10	.0029	.4637	.0029	.4637	343.77	.5363	1.0000	.0000	50	1.5679
.0058	20	.0058	.7648	.0058	.7648	171.89	.2352	1.0000	.0000	40	1.5650
.0087	30	.0087	.9408	.0087	.9409	114.59	.0591	1.0000	.0000	30	1.5621
.0116	40	.0116	.0658	.0116	.0658	85.940	.9342	.9999	.0000	20	1.5592
.0145	50	.0145	.1627	.0145	.1627	68.750	.8373	.9999	.0000	10	1.5563
.0175	1° 00'	.0175	.2419	.0175	.2419	57.290	.7581	.9998	.9999	89° 00'	1.5533
.0204	10	.0204	.3088	.0204	.3089	49.104	.6911	.9998	.9999	50	1.5504
.0233	20	.0233	.3668	.0233	.3669	42.964	.6331	.9997	.9999	40	1.5475
.0262	30	.0262	.4179	.0262	.4181	38.188	.5819	.9997	.9999	30	1.5446
.0291	40	.0291	.4637	.0291	.4638	34.368	.5362	.9996	.9998	20	1.5417
.0320	50	.0320	.5050	.0320	.5053	31.242	.4947	.9995	.9998	10	1.5388
.0349	2° 00'	.0349	.5428	.0349	.5431	28.636	.4569	.9994	.9997	88° 00'	1.5359
.0378	10	.0378	.5776	.0378	.5779	26.432	.4221	.9993	.9997	50	1.5330
.0407	20	.0407	.6097	.0407	.6101	24.542	.3899	.9992	.9996	40	1.5301
.0436	30	.0436	.6397	.0437	.6401	22.904	.3599	.9990	.9996	30	1.5272
.0465	40	.0465	.6677	.0466	.6682	21.470	.3318	.9989	.9995	20	1.5243
.0495	50	.0494	.6940	.0495	.6945	20.206	.3055	.9988	.9995	10	1.5213
.0524	3° 00'	.0523	.7188	.0524	.7194	19.081	.2806	.9986	.9994	87° 00'	1.5184
.0553	10	.0552	.7423	.0553	.7429	18.075	.2571	.9985	.9993	50	1.5155
.0582	20	.0581	.7645	.0582	.7652	17.169	.2348	.9983	.9993	40	1.5126
.0611	30	.0610	.7857	.0612	.7865	16.350	.2135	.9981	.9992	30	1.5097
.0640	40	.0640	.8059	.0641	.8067	15.605	.1933	.9980	.9991	20	1.5068
.0669	50	.0669	.8251	.0670	.8261	14.924	.1739	.9978	.9990	10	1.5039
.0698	4° 00'	.0698	.8436	.0699	.8446	14.301	.1554	.9976	.9989	86° 00'	1.5010
.0727	10	.0727	.8613	.0729	.8624	13.727	.1376	.9974	.9989	50	1.4981
.0756	20	.0756	.8783	.0758	.8795	13.197	.1205	.9971	.9988	40	1.4952
.0785	30	.0785	.8946	.0787	.8960	12.706	.1040	.9969	.9987	30	1.4923
.0814	40	.0814	.9104	.0816	.9118	12.251	.0882	.9967	.9986	20	1.4893
.0844	50	.0843	.9256	.0846	.9272	11.826	.0728	.9964	.9985	10	1.4864
.0873	5° 00'	.0872	.9403	.0875	.9420	11.430	.0580	.9962	.9983	85° 00'	1.4835
.0902	10	.0901	.9545	.0904	.9563	11.059	.0437	.9959	.9982	50	1.4806
.0931	20	.0929	.9682	.0934	.9701	10.712	.0299	.9957	.9981	40	1.4777
.0960	30	.0958	.9816	.0963	.9836	10.385	.0164	.9954	.9980	30	1.4748
.0989	40	.0987	.9945	.0992	.9966	10.078	.0034	.9951	.9979	20	1.4719
.1018	50	.1016	.0070	.1022	.0093	9.7882	.9907	.9948	.9977	10	1.4690
.1047	6° 00'	.1045	.0192	.1051	.0216	9.5144	.9784	.9945	.9976	84° 00'	1.4661
.1076	10	.1074	.0311	.1080	.0336	9.2553	.9664	.9942	.9975	50	1.4632
.1105	20	.1103	.0426	.1110	.0453	9.0098	.9547	.9939	.9973	40	1.4603
.1134	30	.1132	.0539	.1139	.0567	8.7769	.9433	.9936	.9972	30	1.4573
.1164	40	.1161	.0648	.1169	.0678	8.5555	.9322	.9932	.9971	20	1.4544
.1193	50	.1190	.0755	.1198	.0786	8.3450	.9214	.9929	.9969	10	1.4515
.1222	7° 00'	.1219	.0859	.1228	.0891	8.1443	.9109	.9925	.9968	83° 00'	1.4486
.1251	10	.1248	.0961	.1257	.0995	7.9530	.9005	.9922	.9966	50	1.4457
.1280	20	.1276	.1060	.1287	.1096	7.7704	.8904	.9918	.9964	40	1.4428
.1309	30	.1305	.1157	.1317	.1194	7.5958	.8806	.9914	.9963	30	1.4399
.1338	40	.1334	.1252	.1346	.1291	7.4287	.8709	.9911	.9961	20	1.4370
.1367	50	.1363	.1345	.1376	.1385	7.2687	.8615	.9907	.9959	10	1.4341
.1396	8° 00'	.1392	.1436	.1405	.1478	7.1154	.8522	.9903	.9958	82° 00'	1.4312
.1425	10	.1421	.1525	.1435	.1569	6.9682	.8431	.9899	.9956	50	1.4283
.1454	20	.1449	.1612	.1465	.1658	6.8269	.8342	.9894	.9954	40	1.4254
.1484	30	.1478	.1697	.1495	.1745	6.6912	.8255	.9890	.9952	30	1.4224
.1513	40	.1507	.1781	.1524	.1831	6.5606	.8169	.9886	.9950	20	1.4195
.1542	50	.1536	.1863	.1554	.1915	6.4348	.8085	.9881	.9948	10	1.4166
.1571	9° 00'	.1564	.1943	.1584	.1997	6.3138	.8003	.9877	.9946	81° 00'	1.4137
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	DEGREEs	RADIANS
		COSINE		COTANGENT		TANGENT		SINE			

[Characteristics of Logarithms omitted — determine by the usual rule from the value]

RADIANs	DEGREEs	SINE		TANGENT		COTANGENT		COSINE			
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀		
.1571	9° 00'	.1564	.1943	.1584	.1997	6.3138	.8003	.9877	.9946	81° 00'	1.4137
.1600	10	.1593	.2022	.1614	.2078	6.1970	.7392	.9872	.9944	50	1.4108
.1629	20	.1622	.2100	.1644	.2158	6.0844	.7842	.9868	.9942	40	1.4079
.1658	30	.1650	.2176	.1673	.2236	5.9758	.7764	.9863	.9940	30	1.4050
.1687	40	.1679	.2251	.1703	.2313	5.8708	.7687	.9858	.9938	20	1.4021
.1716	50	.1708	.2324	.1733	.2389	5.7694	.7611	.9853	.9936	10	1.3992
.1745	10° 00'	.1736	.2397	.1763	.2463	5.6713	.7537	.9848	.9934	80° 00'	1.3963
.1774	10	.1765	.2468	.1793	.2536	5.5764	.7464	.9843	.9931	50	1.3934
.1804	20	.1794	.2538	.1823	.2609	5.4845	.7391	.9838	.9929	40	1.3904
.1833	30	.1822	.2606	.1853	.2680	5.3955	.7320	.9833	.9927	30	1.3875
.1862	40	.1851	.2674	.1883	.2750	5.3093	.7250	.9827	.9924	20	1.3846
.1891	50	.1880	.2740	.1914	.2819	5.2257	.7181	.9822	.9922	10	1.3817
.1920	11° 00'	.1908	.2806	.1944	.2887	5.1446	.7113	.9816	.9919	79° 00'	1.3788
.1949	10	.1937	.2870	.1974	.2953	5.0658	.7047	.9811	.9917	50	1.3759
.1978	20	.1965	.2934	.2004	.3020	4.9894	.6980	.9805	.9914	40	1.3730
.2007	30	.1994	.2997	.2035	.3085	4.9152	.6915	.9799	.9912	30	1.3701
.2036	40	.2022	.3058	.2065	.3149	4.8430	.6851	.9793	.9909	20	1.3672
.2065	50	.2051	.3119	.2095	.3212	4.7729	.6788	.9787	.9907	10	1.3643
.2094	12° 00'	.2079	.3179	.2126	.3275	4.7046	.6725	.9781	.9904	78° 00'	1.3614
.2123	10	.2108	.3238	.2156	.3336	4.6382	.6664	.9775	.9901	50	1.3584
.2153	20	.2136	.3296	.2186	.3397	4.5736	.6603	.9769	.9899	40	1.3555
.2182	30	.2164	.3353	.2217	.3458	4.5107	.6542	.9763	.9896	30	1.3526
.2211	40	.2193	.3410	.2247	.3517	4.4494	.6483	.9757	.9893	20	1.3497
.2240	50	.2221	.3466	.2278	.3576	4.3897	.6424	.9750	.9890	10	1.3468
.2269	13° 00'	.2250	.3521	.2309	.3634	4.3315	.6366	.9744	.9887	77° 00'	1.3439
.2298	10	.2278	.3575	.2339	.3691	4.2747	.6309	.9737	.9884	50	1.3410
.2327	20	.2306	.3629	.2370	.3748	4.2193	.6252	.9730	.9881	40	1.3381
.2356	30	.2334	.3682	.2401	.3804	4.1653	.6196	.9724	.9878	30	1.3352
.2385	40	.2363	.3734	.2432	.3859	4.1126	.6141	.9717	.9875	20	1.3323
.2414	50	.2391	.3786	.2462	.3914	4.0611	.6086	.9710	.9872	10	1.3294
.2443	14° 00'	.2419	.3837	.2493	.3968	4.0108	.6032	.9703	.9869	76° 00'	1.3265
.2473	10	.2447	.3887	.2524	.4021	3.9617	.5979	.9696	.9866	50	1.3235
.2502	20	.2476	.3937	.2555	.4074	3.9136	.5926	.9689	.9863	40	1.3206
.2531	30	.2504	.3986	.2586	.4127	3.8667	.5873	.9681	.9859	30	1.3177
.2560	40	.2532	.4035	.2617	.4178	3.8208	.5822	.9674	.9856	20	1.3148
.2589	50	.2560	.4083	.2648	.4230	3.7760	.5770	.9667	.9853	10	1.3119
.2618	15° 00'	.2588	.4130	.2679	.4281	3.7321	.5719	.9659	.9849	75° 00'	1.3090
.2647	10	.2616	.4177	.2711	.4331	3.6891	.5669	.9652	.9846	50	1.3061
.2676	20	.2644	.4223	.2742	.4381	3.6470	.5619	.9644	.9843	40	1.3032
.2705	30	.2672	.4269	.2773	.4430	3.6059	.5570	.9636	.9839	30	1.3003
.2734	40	.2700	.4314	.2805	.4479	3.5656	.5521	.9628	.9836	20	1.2974
.2763	50	.2728	.4359	.2836	.4527	3.5261	.5473	.9621	.9832	10	1.2945
.2793	16° 00'	.2756	.4403	.2867	.4575	3.4874	.5425	.9613	.9828	74° 00'	1.2915
.2822	10	.2784	.4447	.2899	.4622	3.4495	.5378	.9605	.9825	50	1.2886
.2851	20	.2812	.4491	.2931	.4669	3.4124	.5331	.9596	.9821	40	1.2857
.2880	30	.2840	.4533	.2962	.4716	3.3759	.5284	.9588	.9817	30	1.2828
.2909	40	.2868	.4576	.2994	.4762	3.3402	.5238	.9580	.9814	20	1.2799
.2938	50	.2896	.4618	.3026	.4808	3.3052	.5192	.9572	.9810	10	1.2770
.2967	17° 00'	.2924	.4659	.3057	.4853	3.2709	.5147	.9563	.9806	73° 00'	1.2741
.2996	10	.2952	.4700	.3089	.4898	3.2371	.5102	.9555	.9802	50	1.2712
.3025	20	.2979	.4741	.3121	.4943	3.2041	.5057	.9546	.9798	40	1.2683
.3054	30	.3007	.4781	.3153	.4987	3.1716	.5013	.9537	.9794	30	1.2654
.3083	40	.3035	.4821	.3185	.5031	3.1397	.4969	.9528	.9790	20	1.2625
.3113	50	.3062	.4861	.3217	.5075	3.1084	.4925	.9520	.9786	10	1.2595
.3142	18° 00'	.3090	.4900	.3249	.5118	3.0777	.4882	.9511	.9782	72° 00'	1.2566
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	DEGREEs	RADIANS
		COSINE		COTANGENT		TANGENT		SINE			

[Characteristics of Logarithms omitted — determine by the usual rule from the value]

RADIANS	DEGREES	SINE		TANGENT		COTANGENT		COSINE			
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀		
.3142	18° 00'	.3090	.4900	.3249	.5118	3.0777	.4882	.9511	.9782	72° 00'	1.2566
.3171	10	.3118	.4939	.3281	.5161	3.0475	.4839	.9502	.9778	50	1.2537
.3200	20	.3145	.4977	.3314	.5203	3.0178	.4797	.9492	.9774	40	1.2508
.3229	30	.3173	.5015	.3346	.5245	2.9887	.4755	.9483	.9770	30	1.2479
.3258	40	.3201	.5052	.3378	.5287	2.9600	.4713	.9474	.9765	20	1.2450
.3287	50	.3228	.5090	.3411	.5329	2.9319	.4671	.9465	.9761	10	1.2421
.3316	19° 00'	.3256	.5126	.3443	.5370	2.9042	.4630	.9455	.9757	71° 00'	1.2392
.3345	10	.3283	.5163	.3476	.5411	2.8770	.4589	.9446	.9752	50	1.2363
.3374	20	.3311	.5199	.3508	.5451	2.8502	.4549	.9436	.9748	40	1.2334
.3403	30	.3338	.5235	.3541	.5491	2.8239	.4509	.9426	.9743	30	1.2305
.3432	40	.3365	.5270	.3574	.5531	2.7980	.4469	.9417	.9739	20	1.2275
.3462	50	.3393	.5306	.3607	.5571	2.7725	.4429	.9407	.9734	10	1.2246
.3491	20° 00'	.3420	.5341	.3640	.5611	2.7475	.4389	.9397	.9730	70° 00'	1.2217
.3520	10	.3448	.5375	.3673	.5650	2.7228	.4350	.9387	.9725	50	1.2188
.3549	20	.3475	.5409	.3706	.5689	2.6985	.4311	.9377	.9721	40	1.2159
.3578	30	.3502	.5443	.3739	.5727	2.6746	.4273	.9367	.9716	30	1.2130
.3607	40	.3529	.5477	.3772	.5766	2.6511	.4234	.9356	.9711	20	1.2101
.3636	50	.3557	.5510	.3805	.5804	2.6279	.4196	.9346	.9706	10	1.2072
.3665	21° 00'	.3584	.5543	.3839	.5842	2.6051	.4158	.9336	.9702	69° 00'	1.2043
.3694	10	.3611	.5576	.3872	.5879	2.5826	.4121	.9325	.9697	50	1.2014
.3723	20	.3638	.5609	.3906	.5917	2.5605	.4083	.9315	.9692	40	1.1985
.3752	30	.3665	.5641	.3939	.5954	2.5386	.4046	.9304	.9687	30	1.1956
.3782	40	.3692	.5673	.3973	.5991	2.5172	.4009	.9293	.9682	20	1.1926
.3811	50	.3719	.5704	.4006	.6028	2.4960	.3972	.9283	.9677	10	1.1897
.3840	22° 00'	.3746	.5736	.4040	.6064	2.4751	.3936	.9272	.9672	68° 00'	1.1868
.3869	10	.3773	.5767	.4074	.6100	2.4545	.3900	.9261	.9667	50	1.1839
.3898	20	.3800	.5798	.4108	.6136	2.4342	.3864	.9250	.9661	40	1.1810
.3927	30	.3827	.5828	.4142	.6172	2.4142	.3828	.9239	.9656	30	1.1781
.3956	40	.3854	.5859	.4176	.6208	2.3945	.3792	.9228	.9651	20	1.1752
.3985	50	.3881	.5889	.4210	.6243	2.3750	.3757	.9216	.9646	10	1.1723
.4014	23° 00'	.3907	.5919	.4245	.6279	2.3559	.3721	.9205	.9640	67° 00'	1.1694
.4043	10	.3934	.5948	.4279	.6314	2.3369	.3686	.9194	.9635	50	1.1665
.4072	20	.3961	.5978	.4314	.6348	2.3183	.3652	.9182	.9629	40	1.1636
.4102	30	.3987	.6007	.4348	.6383	2.2998	.3617	.9171	.9624	30	1.1606
.4131	40	.4014	.6036	.4383	.6417	2.2817	.3583	.9159	.9618	20	1.1577
.4160	50	.4041	.6065	.4417	.6452	2.2637	.3548	.9147	.9613	10	1.1548
.4189	24° 00'	.4067	.6093	.4452	.6486	2.2460	.3514	.9135	.9607	66° 00'	1.1519
.4218	10	.4094	.6121	.4487	.6520	2.2286	.3480	.9124	.9602	50	1.1490
.4247	20	.4120	.6149	.4522	.6553	2.2113	.3447	.9112	.9596	40	1.1461
.4276	30	.4147	.6177	.4557	.6587	2.1943	.3413	.9100	.9590	30	1.1432
.4305	40	.4173	.6205	.4592	.6620	2.1775	.3380	.9088	.9584	20	1.1403
.4334	50	.4200	.6232	.4628	.6654	2.1609	.3346	.9075	.9579	10	1.1374
.4363	25° 00'	.4226	.6259	.4663	.6687	2.1445	.3313	.9063	.9573	65° 00'	1.1345
.4392	10	.4253	.6286	.4699	.6720	2.1283	.3280	.9051	.9567	50	1.1316
.4422	20	.4279	.6313	.4734	.6752	2.1123	.3248	.9038	.9561	40	1.1286
.4451	30	.4305	.6340	.4770	.6785	2.0965	.3215	.9026	.9555	30	1.1257
.4480	40	.4331	.6366	.4806	.6817	2.0809	.3183	.9013	.9549	20	1.1228
.4509	50	.4358	.6392	.4841	.6850	2.0655	.3150	.9001	.9543	10	1.1199
.4538	26° 00'	.4384	.6418	.4877	.6882	2.0503	.3118	.8988	.9537	64° 00'	1.1170
.4567	10	.4410	.6444	.4913	.6914	2.0353	.3086	.8975	.9530	50	1.1141
.4596	20	.4436	.6470	.4950	.6946	2.0204	.3054	.8962	.9524	40	1.1112
.4625	30	.4462	.6495	.4986	.6977	2.0057	.3023	.8949	.9518	30	1.1083
.4654	40	.4488	.6521	.5022	.7009	1.9912	.2991	.8936	.9512	20	1.1054
.4683	50	.4514	.6546	.5059	.7040	1.9768	.2960	.8923	.9505	10	1.1025
.4712	27° 00'	.4540	.6570	.5095	.7072	1.9626	.2928	.8910	.9499	63° 00'	1.0996
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	DEGREES	RADIANS
		COSINE		COTANGENT		TANGENT		SINE			

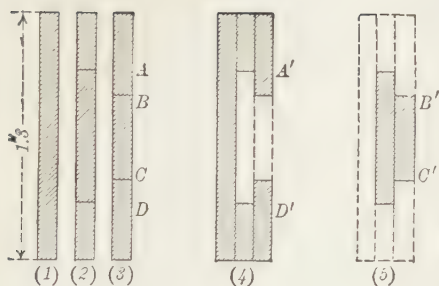
[Characteristics of Logarithms omitted — determine by the usual rule from the value]

RADIANS	DEGREES	SINE		TANGENT		COTANGENT		COSINE			
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀		
.4712	27° 00'	.4540	.6570	.5095	.7072	1.9626	.2928	.8910	.9499	63° 00'	1.0996
.4741	10	.4566	.6595	.5132	.7103	1.9486	.2897	.8897	.9492	50	1.0966
.4771	20	.4592	.6620	.5169	.7134	1.9347	.2866	.8884	.9486	40	1.0937
.4800	30	.4617	.6644	.5206	.7165	1.9210	.2835	.8870	.9479	30	1.0908
.4829	40	.4643	.6668	.5243	.7196	1.9074	.2804	.8857	.9473	20	1.0879
.4858	50	.4669	.6692	.5280	.7226	1.8940	.2774	.8843	.9466	10	1.0850
.4887	28° 00'	.4695	.6716	.5317	.7257	1.8807	.2743	.8829	.9459	62° 00'	1.0821
.4916	10	.4720	.6740	.5354	.7287	1.8676	.2713	.8816	.9453	50	1.0792
.4945	20	.4746	.6763	.5392	.7317	1.8546	.2683	.8802	.9446	40	1.0763
.4974	30	.4772	.6787	.5430	.7348	1.8418	.2652	.8788	.9439	30	1.0734
.5003	40	.4797	.6810	.5467	.7378	1.8291	.2622	.8774	.9432	20	1.0705
.5032	50	.4823	.6833	.5505	.7408	1.8165	.2592	.8760	.9425	10	1.0676
.5061	29° 00'	.4848	.6856	.5543	.7438	1.8040	.2562	.8746	.9418	61° 00'	1.0647
.5091	10	.4874	.6878	.5581	.7467	1.7917	.2533	.8732	.9411	50	1.0617
.5120	20	.4899	.6901	.5619	.7497	1.7796	.2503	.8718	.9404	40	1.0588
.5149	30	.4924	.6923	.5658	.7526	1.7675	.2474	.8704	.9397	30	1.0559
.5178	40	.4950	.6946	.5696	.7556	1.7556	.2444	.8689	.9390	20	1.0530
.5207	50	.4975	.6968	.5735	.7585	1.7437	.2415	.8675	.9383	10	1.0501
.5236	30° 00'	.5000	.6990	.5774	.7614	1.7321	.2386	.8660	.9375	60° 00'	1.0472
.5265	10	.5025	.7012	.5812	.7644	1.7205	.2356	.8646	.9368	50	1.0443
.5294	20	.5050	.7033	.5851	.7673	1.7090	.2327	.8631	.9361	40	1.0414
.5323	30	.5075	.7055	.5890	.7701	1.6977	.2299	.8616	.9353	30	1.0385
.5352	40	.5100	.7076	.5930	.7730	1.6864	.2270	.8601	.9346	20	1.0356
.5381	50	.5125	.7097	.5969	.7759	1.6753	.2241	.8587	.9338	10	1.0327
.5411	31° 00'	.5150	.7118	.6009	.7788	1.6643	.2212	.8572	.9331	59° 00'	1.0297
.5440	10	.5175	.7139	.6048	.7816	1.6534	.2184	.8557	.9323	50	1.0268
.5469	20	.5200	.7160	.6088	.7845	1.6426	.2155	.8542	.9315	40	1.0239
.5498	30	.5225	.7181	.6128	.7873	1.6319	.2127	.8526	.9308	30	1.0210
.5527	40	.5250	.7201	.6168	.7902	1.6212	.2098	.8511	.9300	20	1.0181
.5556	50	.5275	.7222	.6208	.7930	1.6107	.2070	.8496	.9292	10	1.0152
.5585	32° 00'	.5299	.7242	.6249	.7958	1.6003	.2042	.8480	.9284	58° 00'	1.0123
.5614	10	.5324	.7262	.6289	.7986	1.5900	.2014	.8465	.9276	50	1.0094
.5643	20	.5348	.7282	.6330	.8014	1.5798	.1986	.8450	.9268	40	1.0065
.5672	30	.5373	.7302	.6371	.8042	1.5697	.1958	.8434	.9260	30	1.0036
.5701	40	.5398	.7322	.6412	.8070	1.5597	.1930	.8418	.9252	20	1.0007
.5730	50	.5422	.7342	.6453	.8097	1.5497	.1903	.8403	.9244	10	.9977
.5760	33° 00'	.5446	.7361	.6494	.8125	1.5399	.1875	.8387	.9236	57° 00'	.9948
.5789	10	.5471	.7380	.6536	.8153	1.5301	.1847	.8371	.9228	50	.9919
.5818	20	.5495	.7400	.6577	.8180	1.5204	.1820	.8355	.9219	40	.9890
.5847	30	.5519	.7419	.6619	.8208	1.5108	.1792	.8339	.9211	30	.9861
.5876	40	.5544	.7438	.6661	.8235	1.5013	.1765	.8323	.9203	20	.9832
.5905	50	.5568	.7457	.6703	.8263	1.4919	.1737	.8307	.9194	10	.9803
.5934	34° 00'	.5592	.7476	.6745	.8290	1.4826	.1710	.8290	.9186	56° 00'	.9774
.5963	10	.5616	.7494	.6787	.8317	1.4733	.1683	.8274	.9177	50	.9745
.5992	20	.5640	.7513	.6830	.8344	1.4641	.1656	.8258	.9169	40	.9716
.6021	30	.5664	.7531	.6873	.8371	1.4550	.1629	.8241	.9160	30	.9687
.6050	40	.5688	.7550	.6916	.8398	1.4460	.1602	.8225	.9151	20	.9657
.6080	50	.5712	.7568	.6959	.8425	1.4370	.1575	.8208	.9142	10	.9628
.6109	35° 00'	.5736	.7586	.7002	.8452	1.4281	.1548	.8192	.9134	55° 00'	.9599
.6138	10	.5760	.7604	.7046	.8479	1.4193	.1521	.8175	.9125	50	.9570
.6167	20	.5783	.7622	.7089	.8506	1.4106	.1494	.8158	.9116	40	.9541
.6196	30	.5807	.7640	.7133	.8533	1.4019	.1467	.8141	.9107	30	.9512
.6225	40	.5831	.7657	.7177	.8559	1.3934	.1441	.8124	.9098	20	.9483
.6254	50	.5854	.7675	.7221	.8586	1.3848	.1414	.8107	.9089	10	.9454
.6283	36° 00'	.5878	.7692	.7265	.8613	1.3764	.1387	.8090	.9080	54° 00'	.9425
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	DEGREES	RADIANS
		COSINE		COTANGENT		TANGENT		SINE			

[Characteristics of Logarithms omitted — determine by the usual rule from the value]

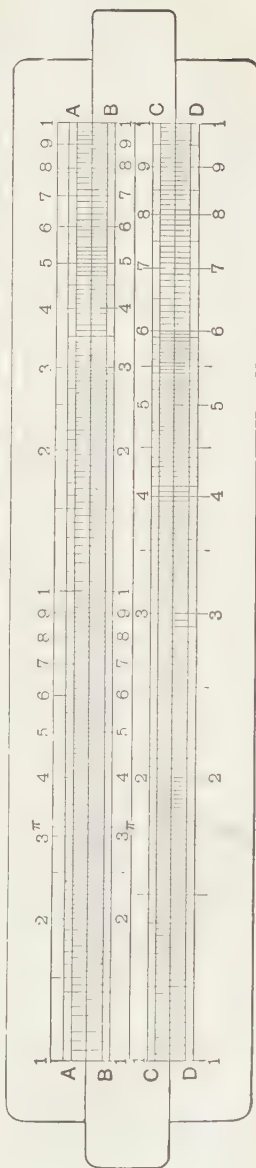
RADIAN	DEGREES	SINE		TANGENT		COTANGENT		COSINE			
		Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀	Value	Log ₁₀		
.6283	36° 00'	.5878	.7692	.7265	.8613	1.3764	.1387	.8090	.9080	54° 00'	.9425
.6312	10	.5901	.7710	.7310	.8639	1.3680	.1361	.8073	.9070	50	.9396
.6341	20	.5925	.7727	.7355	.8666	1.3597	.1334	.8056	.9061	40	.9367
.6370	30	.5948	.7744	.7400	.8692	1.3514	.1308	.8039	.9052	30	.9338
.6400	40	.5972	.7761	.7445	.8718	1.3432	.1282	.8021	.9042	20	.9308
.6429	50	.5995	.7778	.7490	.8745	1.3351	.1255	.8004	.9033	10	.9279
.6458	37° 00'	.6018	.7795	.7536	.8771	1.3270	.1229	.7986	.9023	53° 00'	.9250
.6487	10	.6041	.7811	.7581	.8797	1.3190	.1203	.7969	.9014	50	.9221
.6516	20	.6065	.7828	.7627	.8824	1.3111	.1176	.7951	.9004	40	.9192
.6545	30	.6088	.7844	.7673	.8850	1.3032	.1150	.7934	.8995	30	.9163
.6574	40	.6111	.7861	.7720	.8876	1.2954	.1124	.7916	.8985	20	.9134
.6603	50	.6134	.7877	.7766	.8902	1.2876	.1098	.7898	.8975	10	.9105
.6632	38° 00'	.6157	.7893	.7813	.8928	1.2799	.1072	.7880	.8965	52° 00'	.9076
.6661	10	.6180	.7910	.7860	.8954	1.2723	.1046	.7862	.8955	50	.9047
.6690	20	.6202	.7926	.7907	.8980	1.2647	.1020	.7844	.8945	40	.9018
.6720	30	.6225	.7941	.7954	.9006	1.2572	.0994	.7826	.8935	30	.8988
.6749	40	.6248	.7957	.8002	.9032	1.2497	.0968	.7808	.8925	20	.8959
.6778	50	.6271	.7973	.8050	.9058	1.2423	.0942	.7790	.8915	10	.8930
.6807	39° 00'	.6293	.7989	.8098	.9084	1.2349	.0916	.7771	.8905	51° 00'	.8901
.6836	10	.6316	.8004	.8146	.9110	1.2276	.0890	.7753	.8895	50	.8872
.6865	20	.6338	.8020	.8195	.9135	1.2203	.0865	.7735	.8884	40	.8843
.6894	30	.6361	.8035	.8243	.9161	1.2131	.0839	.7716	.8874	30	.8814
.6923	40	.6383	.8050	.8292	.9187	1.2059	.0813	.7698	.8864	20	.8785
.6952	50	.6406	.8066	.8342	.9212	1.1988	.0788	.7679	.8853	10	.8756
.6981	40° 00'	.6428	.8081	.8391	.9238	1.1918	.0762	.7660	.8843	50° 00'	.8727
.7010	10	.6450	.8096	.8441	.9264	1.1847	.0736	.7642	.8832	50	.8698
.7039	20	.6472	.8111	.8491	.9289	1.1778	.0711	.7623	.8821	40	.8668
.7069	30	.6494	.8125	.8541	.9315	1.1708	.0685	.7604	.8810	30	.8639
.7098	40	.6517	.8140	.8591	.9341	1.1640	.0659	.7585	.8800	20	.8610
.7127	50	.6539	.8155	.8642	.9366	1.1571	.0634	.7566	.8789	10	.8581
.7156	41° 00'	.6561	.8169	.8693	.9392	1.1504	.0608	.7547	.8778	49° 00'	.8552
.7185	10	.6583	.8184	.8744	.9417	1.1436	.0583	.7528	.8767	50	.8523
.7214	20	.6604	.8198	.8796	.9443	1.1369	.0557	.7509	.8756	40	.8494
.7243	30	.6626	.8213	.8847	.9468	1.1303	.0532	.7490	.8745	30	.8465
.7272	40	.6648	.8227	.8899	.9494	1.1237	.0506	.7470	.8733	20	.8436
.7301	50	.6670	.8241	.8952	.9519	1.1171	.0481	.7451	.8722	10	.8407
.7330	42° 00'	.6691	.8255	.9004	.9544	1.1106	.0456	.7431	.8711	48° 00'	.8378
.7359	10	.6713	.8269	.9057	.9570	1.1041	.0430	.7412	.8699	50	.8348
.7389	20	.6734	.8283	.9110	.9595	1.0977	.0405	.7392	.8688	40	.8319
.7418	30	.6756	.8297	.9163	.9621	1.0913	.0379	.7373	.8676	30	.8290
.7447	40	.6777	.8311	.9217	.9646	1.0850	.0354	.7353	.8665	20	.8261
.7476	50	.6799	.8324	.9271	.9671	1.0786	.0329	.7333	.8653	10	.8232
.7505	43° 00'	.6820	.8338	.9325	.9697	1.0724	.0303	.7314	.8641	47° 00'	.8203
.7534	10	.6841	.8351	.9380	.9722	1.0661	.0278	.7294	.8629	50	.8174
.7563	20	.6862	.8365	.9435	.9747	1.0599	.0253	.7274	.8618	40	.8145
.7592	30	.6884	.8378	.9490	.9772	1.0538	.0228	.7254	.8606	30	.8116
.7621	40	.6905	.8391	.9545	.9798	1.0477	.0202	.7234	.8594	20	.8087
.7650	50	.6926	.8405	.9601	.9823	1.0416	.0177	.7214	.8582	10	.8058
.7679	44° 00'	.6947	.8418	.9657	.9848	1.0355	.0152	.7193	.8569	46° 00'	.8029
.7709	10	.6967	.8431	.9713	.9874	1.0295	.0126	.7173	.8557	50	.7999
.7738	20	.6988	.8444	.9770	.9899	1.0235	.0101	.7153	.8545	40	.7970
.7767	30	.7009	.8457	.9827	.9924	1.0176	.0076	.7133	.8532	30	.7941
.7796	40	.7030	.8469	.9884	.9949	1.0117	.0051	.7112	.8520	20	.7912
.7825	50	.7050	.8482	.9942	.9975	1.0058	.0025	.7092	.8507	10	.7883
.7854	45° 00'	.7071	.8495	1.0000	.0000	1.0000	.0000	.7071	.8495	45° 00'	.7854
		Value Log ₁₀		Value Log ₁₀		Value Log ₁₀		Value Log ₁₀		DEGREES	RADIANS
		COSINE		COTANGENT		TANGENT		SINE			

SLIDE-RULE



DIRECTIONS

A reasonably accurate slide-rule may be made by the student, for temporary practice, as follows. Take three strips of heavy stiff cardboard 1".3 wide by 6" long; these are shown in cross-section in (1), (2), (3) above. On (3) paste or glue the adjoining cut of the slide rule. Then cut strips (2) and (3) accurately along the lines marked. Paste or glue the pieces together as shown in (4) and (5). Then (5) forms the slide of the slide-rule, and it will fit in the groove in (4) if the work has been carefully done. Trim off the ends as shown in the large cut.



$$\frac{1}{c} - \frac{1}{c} \cdot \frac{1}{\sin \frac{1}{2} c}$$

$$\log(a+b) = \log \sin \frac{1}{2} (12$$

$$(-1 \log c : \frac{(+1 \log \cos \frac{1}{2} c}{D_2})$$

Case I given 2 angles & side $A = 19^\circ$,
 $B = 36^\circ$, $a = 179$. 40 ft,

$$C = 180 - A - B = 125^\circ$$

$$b = \frac{a \sin B}{\sin A}, \quad c = \frac{a \sin C}{\sin A}$$

$$\log a = 2.25382$$

$$\log \sin B = 9.76922 - 10$$

$$\text{sum } 12.02304$$

$$9.9915 - 10$$

$$\log a = 2.25382$$

$$\log \sin C = 9.95724 - 10$$

$$\log \sin C = 9.95724 - 10$$

$$\text{sum } 12.21110 - 10$$

$$-1 \log \sin A = 2.03109 (-) \log \sin A =$$

$$\log b =$$

$$b = 107.42$$

$$\log c =$$

$$2.21915$$

$$c = 165.63$$

(Check all problems.)



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